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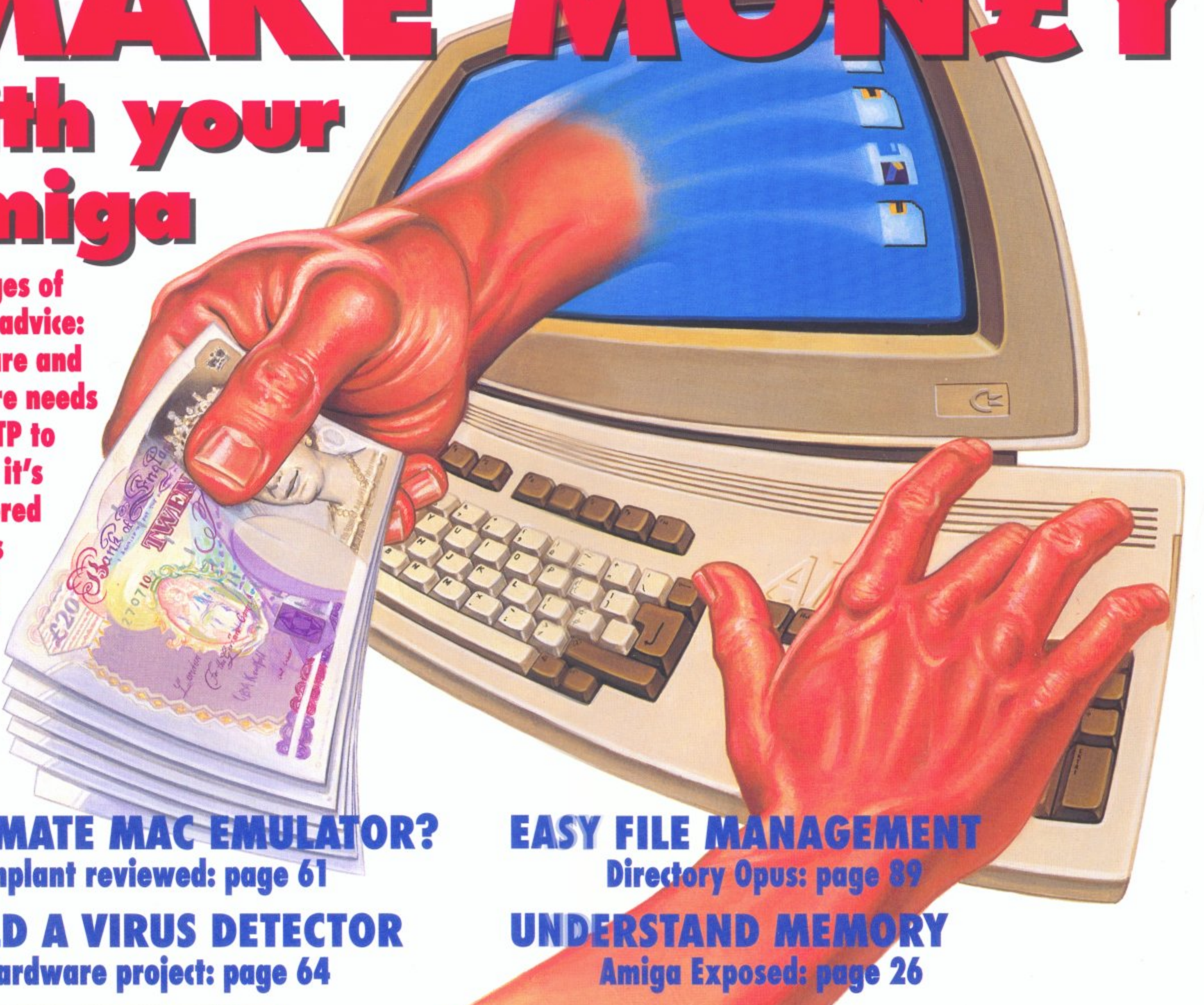
AMIGA SHOPPER

From the makers of AMIGA FORMAT

ISSUE 28 ● AUGUST 1993 ● £1.95

YOUR DEFINITIVE AMIGA GUIDE

MAKE MON£Y with your Amiga



Eight pages of practical advice:

- Hardware and software needs
- From DTP to video – it's all covered
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- Getting grants

ULTIMATE MAC EMULATOR?

Emplant reviewed: page 61

EASY FILE MANAGEMENT

Directory Opus: page 89

BUILD A VIRUS DETECTOR

Hardware project: page 64

UNDERSTAND MEMORY

Amiga Exposed: page 26

AMIGA ANSWERS

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THE
JAKKI BRAMBLES COLUMN

Hi,

Commodores decision to reduce the price of the Amiga 600 took everyone by surprise and really positions the A600 as the perfect entry level computer .

Of course the problem with new technology is that something has to be left behind and in Commodores case it's the poor old 500.

Now Indi tell me that Commodore are taking back all old A500's when you buy a new state of the art Amiga 1200. So dust off that old A500 make sure that it is in full working order and you still have the mouse, modulator, manuals and power pack. Give Indi a call on **0543 419999** and ask for **"Amiga 500 Trade in Desk"**, Indi will send Securicor to your home and pick up your A500 at their cost and then deliver a superb new Amiga 1200 with **£100 off** the advertised price. Remember this is a limited offer

What's a PCMCIA slot I ask? Indi explained to me that its Commodores way of ensuring that both the Amiga 600 and 1200 can remain future proof. Credit card style memory cards are already available from Indi but thats just the beginning, faxes, modems and network cards are on their way and who knows what else. If you need to know more about PCMCIA why not drop me a line.

On the subject of letters I have been swamped. It's absolutely great and I promise each one will be responded to and get a signed photograph so keep them coming! Last months winning letter came from **Adrian Simpson of County Down** Northern Ireland who gave a very well informed comparison between Amiga and less useful consoles.

I was absolutely knocked out with all the details he sent me concerning the music capabilities of the Amiga. Adrians letter was far too detailed to reprint but a big thankyou to him for writing it. Adrian the prize is on its way.

WHAT DOES THIS SYMBOL MEAN

DIRECT MARKETING ASSOCIATION

Finally I received a few important letters asking what is the **DMA** and why is it important to consumers that Indi is part of it. On thais page you will find a letter from the Chairman of the DMA, it's well worth a read.

Jakki Brambles

DMA ENSURES HIGHEST PRACTICE

As with most industries, the UK's personal computer industry has its share of cowboys operating in the mail order sector and at the receiving end a line up of despairing consumers who have suffered at their hands.

A personal computer is a sophisticated and expensive item and provided the purchaser is dealing with a reputable and accredited supplier, buying a computer by mail order can be a perfectly safe and cost effective exercise. The Direct Marketing Association (DMA) was set up in April 92 to set and maintain high standards for the sake of the industry and society at large, and to ensure that we can continue to regulate our own activities on the basis of proper professional responsibility.

Membership of the DMA is not conferred lightly - it is a privilege which entails responsibilities, to the consumer as well as to the industry. The foundation for this must be good practice. DMA members are required to abide by the highest standards as laid down in the DMA's code, enforced on members by The Authority of the DMA a separate body with an independent Chairman, and which is an assurance of vigorous self - regulation and professional responsibility.

DMA members also agree, as a condition of membership, to abide by The British Code of Advertising Practice and The British Code of Sales Promotion Practice: to apply the Mailing Preference Service file when appropriate: and to subscribe to the Advertising Standards Board of Finance (ASBOF) and to the Mailing Standards Levy as applicable.

The DMA symbol can only be used by members. Printed on stationary, advertising and other promotional material it demonstrates that these companies conform to the Association's high standards and are subject to the DMA's Code of Practice, thus enhancing the companies credibility with customers, suppliers and of greatest importance, the consumer.

Since the symbol was introduced last June, it has become synonymous with quality , professionalism and and responsibility. While it cannot be shown in any way which will become a sign of best industry practice and of strict adherence to DMA codes of conduct. The symbol represents authority for members and reassurance for consumers. It has been a high valued mark of confidence signifying to the consumer the truly professional edge of the industry.

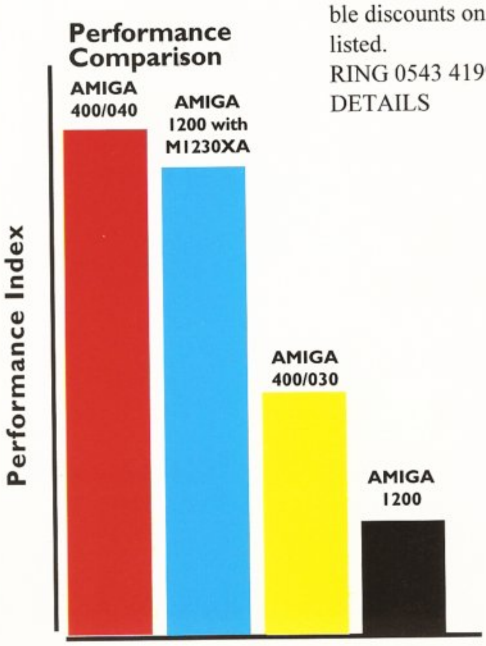
Alison Slan

Alison Slan
(Director of Public Relations,DMA)

NEW MEGA A1200!

Due to the shortage of A4000 / 030 INDI are nowoffering a mega A1200 configuration. Just look at this spec A1200 * 4 MEG RAM * 80 Meg HD * M1230 XA 50 Meg HZ .Runs @ 1.5 times faster than a standard A4000 / 030. Now look at the price **£939.99** (save £100 with A500 trade in) Credit terms available.

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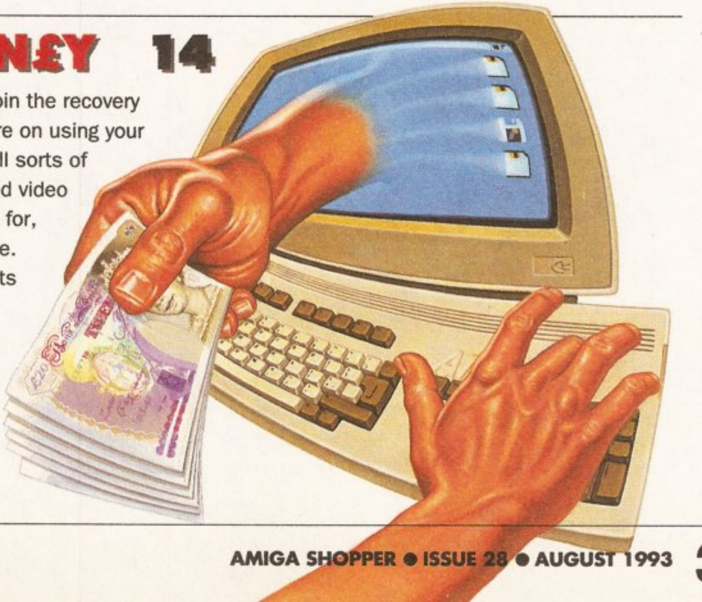
Indi have just launched **"The Indi Multi media Club"**. Members will be offered a complete range of Amiga Software covering Professional, Games, Utilities, CDTV, and CD Audio and video and selected PD.

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ISSUE 28 • AUGUST 1993

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Commodore in crisis!

After a net loss of $177.6 million in the last quarter, Commodore International are restructuring to stay afloat. Cliff Ramshaw gets the inside story from Commodore UK's joint general manager.

Commodore International Ltd, the parent company of various subsidiaries including Commodore UK, announced a loss of $177.6 million for fiscal quarter ending 31 March 1993. This contributes to a net loss of $273.6 million for the nine month period up to that date.

Sweeping changes have been made in an attempt to keep the company profitable. These, along with the financial results themselves, have precipitated a torrent of rumours, with some people wrongly believing that Commodore have already declared bankruptcy.

The reality is less dramatic, but only just. $42 million of the quarter's losses is down to the company's poor operating performance. David Pleasance, Commodore's joint UK general manager, told *Amiga Shopper* that the reason for this is a "softening" in Commodore's markets, particularly Germany, once a Commodore stronghold. Asked if this loss was due to Commodore's attempts at penetrating the PC market, Pleasance replied, "Our PC sales were 30% up in volume, but we made the same amount of money on them. Although we didn't lose any money on PCs, I don't think we made any money either."

Of the remaining $135 million of losses, $65 million is accounted for by write-downs – the term for a re-evaluation of assets held by Commodore, in particular a large stock of A600s, which in the UK are now to be sold at £199.99 to keep them competitive.

The cost of restructuring accounts for the final $70 million. David Pleasance says: "We have to realise that we're a 500 to 600 million dollar company, not a billion dollar company." To this end, Commodore has been severely pruned. As we reported last month, Commodore US made its entire sales force redundant. A distributor network takes over its responsibility, coordinated by a much smaller central US office. One rumour has it that Commodore have applied for Chapter 11, an American form of bankruptcy that enables a company to continue trading without their creditors demanding monies owed and forcing the company into liquidation. Pleasance assured us that this was not the case, but said that Commodore would have had to apply for Chapter 11 if the restructuring had not taken place. By avoiding Chapter 11, he said, Commodore executives were able to do the restructuring rather than someone else.

Sweeping cuts have been made among the European subsidiaries too. The offices in Benelux, Sweden, Norway, Spain and Portugal have all been closed down. Operations in Sweden and Norway will be handled by the Denmark office, while the rest will be controlled from the cut-down German office.

In the UK, four people have already been made redundant, and a further four are to go within the next two months. Pleasance explained that the UK subsidiary has been less affected by the changes than others because of its relative strength.

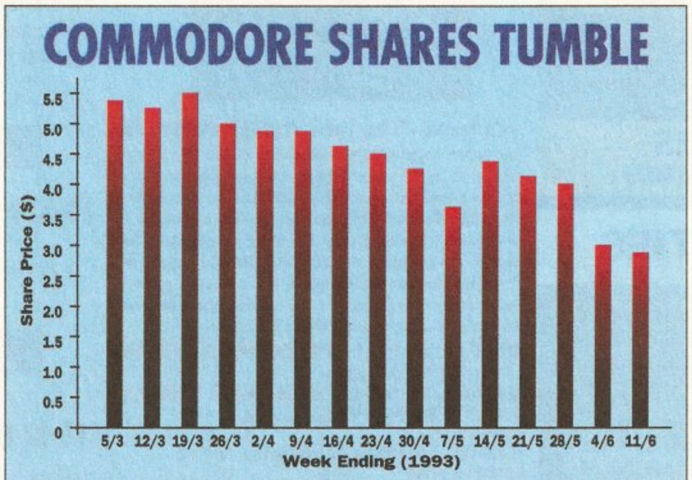
With their share prices dropping steadily for more than a year now, hitting an all-time low of $2.875 at the time of writing, the question has to be asked: have Commodore got a long-term future? Pleasance replied: "Well, I hope so. I think [after our restructuring] we're in very good shape. The tough time will be the next couple of months."

With the company in such a position, there's the obvious danger of a takeover bid, but Pleasance says, "There is no risk of us being bought out. A large portion of the shares is held by the Chief Executive Officer. He and his friends own enough to block an unwanted takeover bid." Would a financial partner would be a viable option? "Certainly a suitable proposal would be considered, but it's not true that one has been made."

Ironically, Commodore's new 32-bit machines have sold far more than the company could have hoped. Commenting on A4000-030 supply problems, Pleasance said, "Demand has gone crazy. We've never had this sort of uptake on an up-market machine before." Orders are four times greater than predicted, but *Amiga Shopper* was assured that outstanding orders would be fulfilled by the time you read this. What about the rumours that some chip suppliers have put Commodore on credit hold? "There's probably some truth in that," Pleasance said. "Cash flow is very important to us. Just as we've asked our creditors, we've asked some suppliers to go easy on us. We should not have a problem getting components."

Pleasance says the next two months will be the tough ones. We believe it is during this time that the rumoured Amiga CD console will be launched. Obviously Commodore hope its success will bolster creditors confidence in them. We asked Pleasance how important it is to Commodore's survival. He replied guardedly: "If such a product exists, it will be important. Any new product we release is important."

What message does Pleasance have for *Amiga Shopper* readers? "To assure them that they should look at this move positively. This restructuring makes us leaner and meaner and therefore more competitive. I'd tell people to hang in there. We're the leaders in home computer technology and we intend to stay that way." AS



The value of Commodore International's shares has been falling pretty consistently for well over a year – and the decline has continued over the last 15 weeks (at the time of going to press).

INDUSTRY REACTION

The opinions of just some of the key players in the Amiga market:

Jeremy Rhyll, Digita International's Managing Director – "Out of difficulty comes opportunity. Commodore have always performed best when their backs are against the wall. As far as the UK is concerned, they couldn't have a better man in charge than David Pleasance."

Gerry Garnick, GVP's Vice President of Sales and Marketing – "This is a trend we're seeing in the US with all big companies. From our point of view it doesn't make us happy, but we're optimistic that the market is still viable. Our sales are down but we're still very actively developing for the Amiga. From the users' viewpoint they shouldn't get too concerned. We think some of the new products Commodore have got planned are viable."

Andy Leaning, Silica Systems' PR Manager – "Commodore would seem to have difficulties. But they are not from sales of the Amiga in the UK, rather from overheads of the worldwide organisation. From our own sales records the Amiga, in the UK, is doing better than at any other time in its history. Based on our knowledge and experience, we have no doubt that they will quickly return to profit."

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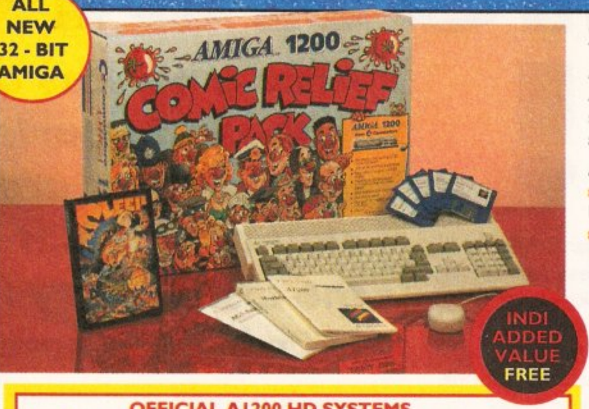
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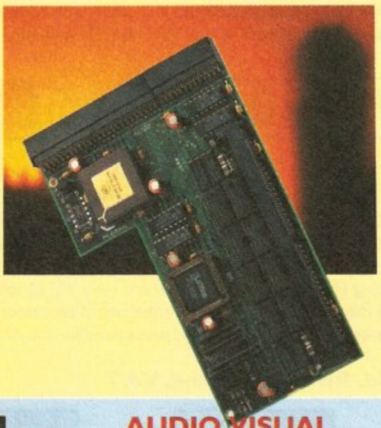
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OpalVision Video Processor - Plugs into the OpalVision mainboard and adds a waelth of additional features * 24 Bit real - time frame grabber from composite or S - Video. * Professional quality genlocking
*VLSI microcode processor "Roaster Cip" for Digital Video Effects.
*Luninance & Chroma Keying * 256 - level "Alpha Channel" (transparecy) key.Management Software
Full specification available on request

OpalVision Video Suite - An advanced external rack mounted video and audio switching device with it's own internal computer. Inclu 9 video and 10 audio inputs, 24 - Bit frame store and a host of special effects triggered manually or automatically.Full specification available on request

OpalVision Scan - Rate Convertor - For 31 Khz non - interla output of Amiga graphics, OpalVision images and any Pal or NTSC sour Time Base Correction adds to the list of professional features of a unit that simply plugs into the OpalVisionmain board.Full specification availa on request

Amiga 4000 OpalVision Systems

Complete Amiga 4000 / OpalVision systems are available for a range of applications
*Graphics/ Fine Artists * Multimedia * Videographers * Animators * Desktop Publishing * Designers

TERMS AVAILABLE OVER 6, 12, 24, & 36 MONTHS SUBJECT TO STATUS. WHY NOT RING FOR A QUOTE. SAMEDAY RESPONSE. (SEE EXAMPLE)

Panasonic *Quiet* Colour Printing

DIRECT MARKETING ASSOCIATION

We researched the colour printer market at great depth to find a colour printer good enough to cope with Amiga's powerful output, yet at an affordable price.
We found the perfect printer in the KX - P2180 and KX - P2123 quiet printers.
We then considered that if you were going to buy a Panasonic printer you would probably need a quality word processing package to use with it. We found that too, with 'Wordworth' yet at a retail price of £129.99 we thought that might be a little too expensive on top of your printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every Panasonic printer. How's that for added value?

Panasonic KX - P2180



***WORDWORTH COMPLETELY FREE! WITH PANASONIC QUIET PRINTERS.** The writers choice. The ultimate word processor for AMIGA computers. Wordworth is undoubtedly the ultimate word / document processor for the full range of AMIGA computers. The graphical nature of WORDWORTH makes producing documents faster and easier, with the enhanced printing fonts (including full Panasonic KX - P2180 and KX - P2123 colour printing support), Collins spell checker and thesaurus, no other word processor comes close. "Without doubt this is one of the best document processors for the AMIGA, Today" (Amiga Format)

NORMAL RRP £129.99 inc. VAT

INDI PRICE £189.99

The new Panasonic KX - P2180 9 -pin quiet printer. Produces crisp clear text in mono or in 7 glorious colours with new quiet technology. THe new KX - P2180 is typically 15dBa quieter in operation, than the competition.

* **Fast Printing** Speeds 192 CPS NLQ
* **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta,black)
* **Quiet printing** Super quiet 45 - 48 dBa sound level (most matrix printers are typically in excess of 60 dBa)
* **6 Resident Fonts** Over 6,100 type styles using Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts.
* **3 Paper Paths** Paper handling from bottom, top and rear for total flexibility
* **1 Year Warranty** for total peace of mind

Panasonic KX - P2123



INDI PRICE £239.99

The new high performance Panasonic KX - P2123 24 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price

* **Fast Printing Speeds** 192 CPS draft, 64 CPS LQ and 32 SLQ.
* **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta, black)
* **Quiet Printing** Super quiet 43.5 - 46 dBa sound level (most matrix printers are typically in excess of 60 dBa)
* **7 Resident Fonts** Over152,000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script, and Sans Serif Fonts.
* **24PIN Diamond** Printhead High performance and high quality output
* **1 Year Warranty** for total peace of mind.

Panasonic LASER PRINTER

KX - P4410 LASER PRINTER

KX - P4430 LASER PRINTER







WORDWORTH COMPLETELY FREE!WITH PANASONIC LASER PRINTERS.
The writers choice. The ultimate word processor for AMIGA computers
NORMAL RRP £129.99 inc VAT

Once again INDI have joined together with Panasonic to offer all Amiga owners the most outstanding Laser Printer offer ever. We are now able to offer high quality, professional laser printing at affordable prices. We are also giving away a copy of Wordworth with every Panasonic Laser Printer purchased (RRP £129.99). Whether you are looking for a laser printer to handle word processing, DTP, presentation or complex graphic applications - the Panasonic range offers you the power to meet your requirements.

KXP - 4410

* 5 pages per minute
* 28 resident fonts
* Optional 2nd input bin(total printer capacity 2 x 200 sheets)
* Low running costs
* Parallel interface
* Optional memory expansion to 4.5 Mb (0.5 as standard)
* HP laserjet II Emulation

INDI PRICE £499.99 inc. VAT

Imminent price increase. This price while stocks last.

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic 2 YEAR ON-SITE WARRANTY

KXP - 4430

* Satinprint (optimum resolution technology)*
* 5 Pages per minute
* HP Laserjet III Emulation, PCL 5
* 8 Scalable fonts & 28 bitmap functions
* Optional 2nd input bin (total printer capacity 2 x 200 sheets
* Optional memory expansion to 5.0 Mb (1 Mb as standard)

INDI PRICE £699.99 inc. VAT

Imminent price increase. This price while stocks last.

*(Satinprinters use optimum resolution technology to produce truly outstanding print quality. This software technique smooths away traditional jagged edges on curved characters and lines by varying the printed dot size

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic PRINTER ACCESSORIES



1) PANASONIC AUTOMATIC SHEET FEEDER
Automatic sheet feeder for KXP 2180/ KXP 2123 holds 80 A4 sheets. **INDI PRICE £89.99**

2) PRINT DUST COVER
Specially tailored quality dust cover for Panasonic KXP 2180/ KXP 2123 printer. **INDI PRICE £8.99**

3) PRINTER STAND
2 piece printer stand. **INDI PRICE £9.99**

4) PAPER PACK
500 sheets quality A4 paper. **INDI PRICE £9.99**

5) CONTINUOUS PAPER
2000 sheets 1 part listing paper. **INDI PRICE £19.99**

6) PARALLEL PRINTER CABLE
To be used when connecting Amiga to Panasonic printers.
INDI PRICE £8.99 (£5.99 if purchased with a printer)

7) PANASONIC COLOUR RIBBON
Colour ribbon for KXP 2180/ KXP 2123.
INDI PRICE£18.99

8) PANASONIC BLACK RIBBON
Black ribbon for KXP 2180/ KXP 2123. **INDI PRICE £9.99**

SAVE ££££'S ON THE FOLLOWING ACCESSORY PACKS

PACK 1
PANASONIC COLOUR RIBBON PACK
Contains 6 colour ribbons for the KXP 2123 RRP £119.99.
INDI PRICE £34.99 SAVE £30!!!

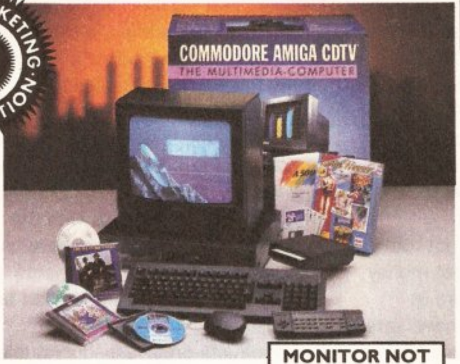
PACK 2
PANASONIC RIBBON PACK
Contains 2 black and 4 colour ribbons for KXP 2180/ KXP 2123.RRP £99.99.
INDI PRICE££69.99 SAVE £30!!!

PACK 3
PANASONIC DELUXE ACCESSORY PACK
Contains automatic sheet feeder, 2 black ribbons, 2 colour ribbons, 1 dust cover, 2 piece printer stand. RRP £169.99 **INDI PRICE £139.99** SAVE £30

Add £2.50 carriage to all printer accessories or combinations thereof

12 MONTHS INTEREST FREE CREDIT AVAILABLE ON CDTV EXTERNAL HARD DISK SUBJECT TO STATUS. LOW INTEREST CREDIT AVAILABLE ON ALL ORDERS OVER £200

AMIGA CDTV THE MULTIMEDIA COMPUTER TOTAL HOME ENTERTAINMENT SYSTEM



MONITOR NOT INCLUDED



The problem with any new product is that it always takes time for everyone to realise its full potential.
CDTV is no exception and in our opinion everything we have read does a pretty poor job of explaining just what CDTV can do and why it is so exciting.

THE INDI GUIDE TO CDTV

IT'S A CDTV PLAYER - Yes, it will play all your Primal Scream, Paverotti, Pink Floyd and any other CD you care to mention in superb high quality stereo, with infra red remote control.
IT' AN AMIGA - Plug in the keyboard, switch on the external disk drive and the colossal range of inexpensive Amiga Software can be used on CDTV.

S A MULTIMEDIA SYSTEM - Just imagine, stereo sound, images and text all on screen. It asks a question, you respond, it responds - truly inter-e! Each CD disk holds hundreds of megabytes of data with instant optical access. The whole of Hutchinsons encyclopeadia fits on to one disk. This inter-e system is a unique aid for Education, Business or Leisure. The future is here!

CK CONTENTS AS STANDARD ✻ Amiga CDTV Player ✻ CDTV Keyboard ✻ CDTV 1411 3.5" Disk Drive ✻ CDTV Infra Red Remote troller ✻ CDTV Wired Mouse ✻ CDTV Welcome Disk ✻ Manuals ✻ Fred Fish CDTV Disk

I VALUE ADDED FREE ✻ Lemmings CDTV (£34.99)
Blues Brothers (£12.99)
Pipemania, Populous, Kickoff 2,
pace Ace.

INDI PRICE

PACK AS SHOWN £329.99

PRICE CRASH ~~£399.99~~

MULTI MEDIA PACK WITHOUT INDI VALUE ADDED £329.99

CDTV CONNECTS DIRECTLY TO YOUR TV SET

AMIGA CDTV ACCESSORIES



THE BRICK - ETTE
Just plug in the brick - ette and use any wired Amiga compatible joystick, mouse of trackball device on the Commodore CDCTV. The built - in 8 - bit Micro Processor gives the Brick - ette big smarts in a tiny package and makes it easy to use just plug into the remote port and it is ready to go with real time mouse or joystick movement on your V. No loading of driver programs or software. No ches for mouse or joystick. Special settings (with se) allow you to blast away with with three rapid modes & dual fire buttons. Comes complete with on Micro switched joystick.
I EXCLUSIVE £49.99
two joysticks **£59.99**



BLACK 1084S MONITOR
At last the CDTV Monitor you have been waiting for. The original and best selling colour/ stereo monitor from Commodore is now available in black to complement your CDTV
INDI PRICE £189.99
(or £179.99 when purchased with CDTV Multi Media pack



If you are thinking of buying CDTV or already own one you'll be pleased to know that INDI stock all CDTV accessories and software that are available from manufactures. We believe in CDTV and we therefore continue to support this exciting product. You will always have a source of product for your CDTV from INDI.

L to R

CDTV Encore SCSI Controller + Internal Mount	**£109.99**
CDTV Internal Genlock	**£ 149.99**
Black 1084S Colour Stereo Monitor	**£189.99**
(When purchased with CDTV Multi - Media Pack)	**£179.99**
CDTV Remote Mouse	**£49.99**
Scart TV / Monitor Lead (inc Stereo Phono Lead)	**£14.99**
Megachip - 1Mb Upgrade Chip RAM Upgrade for CDTV	**£159.99**
CDTV Trackball	**£69.99**

AMIGA CDTV EXTERNAL HARD DISK DRIVE

You've got the CDTV, you've got the keyboard and the floppy disk drive - for a total computer solution all that's needed is an ultra fast hard disk drive.
The CDTV - HD unit boasts a massive 85 Mb of hard disk storage with lightning fast access times through its SCSI interface. The unit comes complete with Workbench 1.3 and all necessary cables.



INDI PRICE
£299.99

12 MONTHS INTEREST FREE CREDIT ON THIS PRODUCT. PHONE FOR DETAILS (SUBJECT TO STATUS)

AMIGA CDTV SOFTWARE

SEE THE JAKKI BRAMBLES PAGE FOR DETAILS OF THE INDI SOFTWARE CLUB

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Guy Spy	£29.99
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Music Maker	£34.99
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Karaoke Fun Hits 1	£14.99
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Voice FX	£19.99
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INDI DIRECT MAIL

DESPATCH

All orders received by 6pm Monday to Friday are despatched sameday for delivery using our national courier - Securicor. (UK Mainland only). Saturday deliveries are available at a small surcharge. If you are out when we deliver, a card will be left at your home giving you a contact telephone number to arrange a convenient re - delivery.
Delivery queries can be resolved immediately using our on - line computer.
Cheque orders are despatched immediately on cheque clearance, usually 10 working days from receipt. A delivery charge of £5.00 is made per item unless otherwise stated.
WE ALSO ACCEPT B.F.P.O. ORDERS (DUTY FREE) CARRIAGE CHARGE AT UK POSTAL RATES.

HOW TO ORDER

BY POST - Simply fill in the coupon below.
BY PHONE - phone lines open9.00am - 7.00pm Mon - Fri. 9.00am - 4.30pm Sat. - where your call will be answered by one of our INDI sales team. After 7.00pm each day your call will be answered by answerphone. If you would like to place an order have all the details at hand including credit card. All offers subject to availability. Prices correct at time of going to press. May we suggest you call before ordering.

SEND YOUR ORDER TO:

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AS0793

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I enclose cheque/ PO for £..........
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WELCOME



The editor, Cliff Ramshaw, gives his penny's worth...

Bad news is in no short supply this month. On page 5 you'll find full details on Commodore's dire troubles, along with an explanation from UK main man David Pleasance, who remains steadfastly optimistic about the company's future.

For DMI, better known to us as HB Marketing, the future is a thing of the past. The tale of the demise of one of the biggest distributors of Amiga software is told in the story to the right.

But, hey, it's not all bad! Our main feature this month gives practical advice on how you can make real money with your Amiga (perhaps you'll have more success than Commodore), and gives valuable hints and tips on dealing with the tax man and your bank manager.

Keep your comments on the mag and the Amiga coming – it helps us to keep improving.

Direct Marketing down

Direct Marketing International PLC has gone into liquidation.

DMI PLC was the parent company of HB Marketing, long-standing distributor of serious Amiga software. DMI PLC was put into liquidation on 21 May following a shareholders' meeting. A creditors' meeting on 3 June ratified the appointment of Begbie Norton as the liquidators. HB Marketing itself then went into liquidation on 11 June.

Former managing director of DMI Keith Howell told *Amiga Shopper* that one of the primary reasons for the company's failure was a major accounting problem in the company's leisure development area. DMI, he said, was working in a contracting market. The entry of Micro-PACE into the Amiga peripheral and software distribution network only served to offer more competition to the beleaguered DMI.

Howell assures us that not too many customers will have lost money – the liquidators put the figure at around 50. Customers who have sent money to DMI but not received their goods should contact the liquidators Begbie Norton on ☎ 071 430 2321 as soon as possible.

Howell himself is starting a new company, Visual Products. Among other things, the company is to represent RocTec in the UK, and will be distributing their video graphics products. The first of these is to be the new version of the *RocGen Plus*, which is now compatible with the A1200. Visual Products assure us that more exciting developments are on the way. Visual Products can be contacted on ☎ 0494 890601.

Products previously distributed by DMI or HB may now become available through other companies such as ZCL, Silica, Meridian and Mico-PACE.

Clip art rides into town

Diskotech have released a two-disk collection of clip-art entitled *Western Movies*.

The collection contains 2,300 individual graphics and ready-made animations for use in packages such as *Deluxe Paint*. Its images are presented in the correct scale, colours and detail to enable the user to create miniature Western "movies". The company claim that just about any scene from your favourite Westerns can be created from the supplied graphics. *Western Movies* costs £15 from Diskotech ☎ 05912 242.



***Western Movies* – a collection of graphics and animations bound to appeal to American cowboy Bob Liddil.**

A600 AT ROCK-BOTTOM PRICE

Commodore has dropped the price of the stand-alone A600 to £199.99.

The two packs in which it is also sold have both been reduced too. *The Wild, Weird & The Wicked* pack, containing *Deluxe Paint 3* and three games, is now £229.99, while the *Amiga 600 HD Epic* pack, with *DPaint 3, Trivial Pursuit,* a word processor and three other games, is £349.99.

David Pleasance, Commodore's General Manager, Sales and Marketing, commented: "For hardly any more cash than a console you can have a brilliant games machine with genuine computing power."

The price puts the A600 very much in the position of C64 of the '90s – a cheap and cheerful entry-level computer. The price drop also forms a significant part of of Commodore's recent $65 million stock write-down (see story, page 5).

Commodore ☎ 0628 770088.

CD TITLE FROM ALTERED IMAGES

Altered Images have released a CD title that aims both to entertain and educate.

Based on the book *Alistair In Outer Space*, the CD of the same name will work with both the CDTV and Amigas fitted with the A570 CD-ROM drive.

Rather than going for a disc that relies heavily on digitised still images, the makers have included a number of animations as well as a narration facility. Features of the disc include: 26 animated pages, an illustrated index, interactive pages with hidden educational games, the facility to speak words and sentences, square puzzles, a colouring book and a card game.

Alistair In Outer Space is aimed at 5 to 9 year olds and costs £24.99. For more information call Altered Images ☎ 0234 340722.

Also available from the company is a set of AMOS routines to enable programmers to control a connected CD player. The routines provide facilities to play and halt tracks, pause tracks and control the CD player's volume. Also included is a program which acts as a conventional interface to a CD player, demonstrating the use of the routines. The AMOS routines are available on disk for £4.95 from Altered Images.



***Alistair In Outer Space* on CD – you've read the book, now's your chance to play the computer game.**

Omega sound

DIY hardware buffs will be pleased by Omega Projects' move to release their Amiga peripherals in kit form.

Omega Projects' products include *Sound Trap* (a sound sampler), *Mini-Midi, Mix-It* (audio mixer), a 512K RAM expansion, a ROM switcher and *Sound Enhancer Plus*.

The first of these to be released in kit form, coming with all necessary parts, a printed circuit board and full documentation, is *Sound Trap 3*. It costs £19.99 plus postage and packaging, and is available from Omega Projects ☎ 0942 682203.

One stop CD shop

Capri CD Distribution have committed themselves to selling every single CDTV title available.

The company, based in Marlow, Buckinghamshire, is headed by Richard Gandy, chairman of the National Association of Specialist Computer Retailers. A full catalogue of titles is available on request. Capri ☎ 0628 891022.

Alleged cyberpunk nicked

A computer user has been arrested for allegedly distributing pirated software via a bulletin board.

The arrest follows a raid by New Scotland Yard's Metropolitan Police Computer Crime Unit in conjunction with FAST, the Federation Against Software Theft. New Scotland Yard issued the following statement: "Officers of the Metropolitan Police Computer Crime Unit in association with FAST and with assistance from computer companies Nintendo, Sega and Commodore this morning executed a search warrant under the Copyright, Designs and Patents Act 1988 at an address in Cheshunt.

"A 19-year-old man was arrested in connection with the alleged unauthorised sale of computer software. The allegation concerns the unlawful sale of computer games software through a computer bulletin board. It is alleged that the pirated software was of a sort not yet generally released in the UK.

"A large amount of computer equipment and documents were seized. The man is being held in custody at Cheshunt Police Station. Enquiries continue."

FAST's chief executive Bob Hay added: "Bulletin boards have been responsible for creating an open forum for computer users to share a wealth of information and ideas. Unfortunately as with all great ideas, there's always a group of people with a 'vandal' mentality that will look to ruin things. Blatant abuses of bulletin boards in terms of introducing offensive material, illegally copying other people's work and spreading viruses only serve to degenerate the quality of service for everyone else."

FAST ☎ 0628 660377.

STARS FALLING IN PRICE



Star have announced price reductions on two of their low-cost colour dot matrix printers.

The reductions form an attempt by Star to consolidate their position as leading manufacturers of colour dot matrix printers in the UK, and to enable their colour printers to compete more effectively against monochrome dot matrix printers.

The two machines affected are the 9-pin *LC-100* Colour, falling from £257.33 to £233.83, and the 24-pin *LC-200 Colour*, falling from £410 to £391.28.

Star Micronics ☎ 0494 471111.

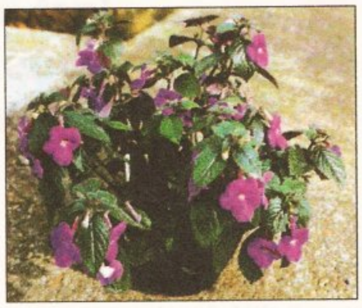
AMIGA HELPLINE MOVES

The Amiga helpline, a four-year-old organisation that aims to solve members' Amiga problems, has moved to new premises.

The move comes as the organisation opens up another membership section, the 24-bit Club, which is for people working with true-colour cards. Membership costs £20, for which you get free access to over 10,000 backdrop and texture map images. Free access is also given to the club's 3D object library and advice service.

Membership of the Amiga Helpline also costs £20. It provides free access to PD software, clip art and fonts, as well as replies to technical queries. You can join both clubs before 1st September for £35.00. Send a stamp to Amiga Helpline & 24-bit Club, 6 Skirsa Square, Unit 1, Glasgow G23 5DW.

ARK's jungle



High-quality plant images from ARK.

Applied Research Kernel are to sell a range of high-quality plant images, digitised at 18 bits in resolutions up to 1,200 x 800 pixels.

The images are available in a variety of graphics formats, including IFF, HAM and JPEG. They can be used independently, or in conjunction with the company's *Plants For All Seasons* database system. Each image costs between 20p and 60p, depending on quality. Contact ARK ☎ 0983 551 496.

Subtitles on every page

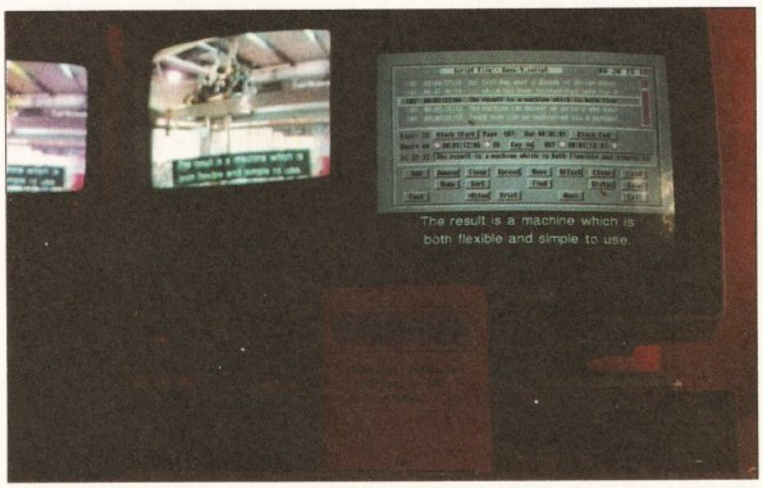
Zen Computer Services have launched an Amiga-based subtitling system.

Euro-Titler, as it is known, has already seen service with Granada TV, in the programmes *Disappearing World* and *World In Action*. Now it is available to the public.

The subtitle captions can be edited on the Amiga, and, with the aid of a genlock, previewed over the source video. When it comes to the on-line stage, the captions can either be output directly from the Amiga or downloaded to an Aston 4 caption generator which is controlled from the Amiga.

Timing can be accomplished by a software pseudo-timecode generator, or via hardware. Either an external card or Zen's VITC/LTC timing card can be used.

Euro-Titler can import and export ASCII text, and produces one- or two-line captions which can be boxed if required. Standard Agfa Compu-Graphic fonts can be used and anti-aliased. A superior version of *Euro-Titler*, called *Euro-Titler Broadcast*, also has Aston 4 support and external keyer control. It costs £380, whereas *Euro-Titler* costs180. The VITC Internal Reader Card for £450. Zen Computing Services ☎ 061 793 1931.



If I had one of these in the office, perhaps I wouldn't have to write this myself.

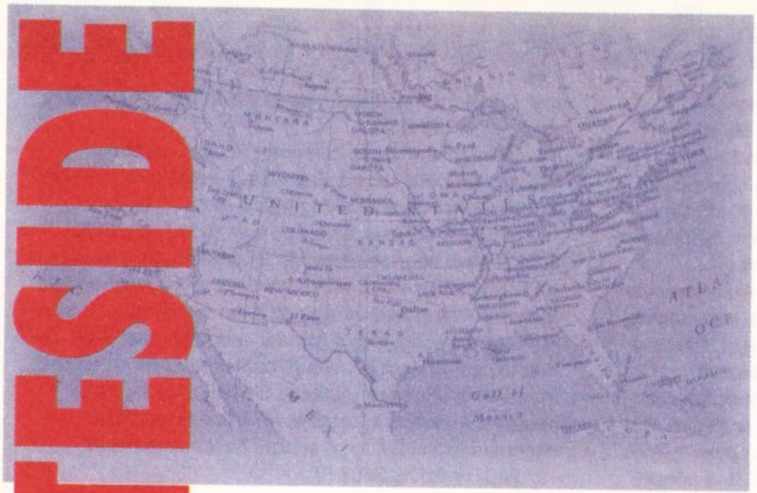
Cheap typefaces available

A CD-ROM containing 1,000 typefaces has been released by CD Enterprises. Called *Serials Typecollection Version 3*, the disc contains typefaces in PostScript Type 1 and TrueType formats.

The price of the disc is £410, meaning the fonts cost 41 pence each. Alternatively CD Enterprises will sell you typefaces on floppy disks: a minimum of 12 for £60.

The collection contains Serif, Sans Serif and Decoratif faces, as well as 64 TopTypes for headlines and titles. Both screen and printer fonts are included. Call CD Enterprises ☎ 0457 865971.

STATESIDE



Amiga Shopper's own American cowboy, Bob Liddil, follows up last month's story about the finances of the Big C in the US.

Rumors concerning Commodore America's impending demise are flying like bats on a warm summer night. One story even has Commodore filing bankruptcy in Pennsylvania. Another rumor, that Commodore is cutting costs at every opportunity, seems to be true, as witnessed by the sacking of its sales force, reported last month, and its recent "invisible man" imitation at America's premier consumer electronics and computer showcase, CES.

The mega-giant Consumer Electronics Show in Las Vegas saw long time Amiga manufacturers such as Gold Disk and others show up without a single Commodore support product, old or new. Anyone interested in the Amiga who attended CES would have gone home with the distinct impression that our favorite computer is headed for extinction. The only Amiga to be found on the floor was in the NewTek display and it was not sporting a Commodore emblem, but a NewTek label. Commodore had a very small office type meeting room, but not much else in the way of visible presence.

In fairness, many of Japan's giant consumer electronics manufacturers such as Toshiba and Panasonic were also either absent or dramatically scaled down in booth space. But how can Commodore ignore one of the largest Consumer Electronics shows in North America?

Good common sense, actually, if one examines the facts. And the facts are: the outfit's losing money, and it needs to find ways to conserve a diminishing cash flow.

Here's how the America OnLine commercial bulletin board service's financial news wire described Commodore in crisis.

On May 28, Commodore International Limited reported a net loss of $177.6 million, or $5.37 per share on sales of $120.9 million for the third fiscal quarter ended March 31, 1993.

This compares with earnings of $4.1 million, or $.12 per share on sales of $194.6 million in the year-ago quarter.

For the nine months ending March 31, 1993, the net loss was $273.6 million, or $8.27 per share, compared with net income of $49.5 million, or $1.47 per share in the same period of the prior year. Sales for the nine months were $517.2 million, compared with $770.3 million in the year-ago period.

Overall, the sales decline of almost 40 percent for the quarter was primarily due to prevailing economic softness in all of the company's major markets, especially Germany. There was also significant pricing erosion for the company's older Amiga models and PC products. Unit volume of Amiga products declined 25 percent, while Amiga revenues declined over 45 percent. PC unit volume increased 30 percent, but revenues increased only slightly from the prior year. C64 computer sales were nominal in the quarter. The unit sales decline and severe pricing erosion during the quarter, primarily in the month of March, had a substantial adverse effect on profitability for the March quarter.

In light of this significantly changed business environment, the company re-evaluated projected inventory values and determined that writedowns of $65 million were required to reduce inventory, including the older Amiga products, to current estimated net realizable value. In addition, the company made a provision of $70 million for special pricing and promotional allowances, additional restructuring costs, and asset writedowns.

Not that Commodore is in a state of panic over this. Irving Gould, chairman and chief executive officer, stated: "We are extremely disappointed with our results for the first nine months of this fiscal year. We believe Commodore's technology, brand name and distribution network continue to have significant value and we are exerting all of our efforts to restructure the company to take advantage of these values during this period of severe difficulty."

All this was backed up by accountant's sheets and such [see main story, page 5].



The CES show in Las Vegas, probably the biggest computer show in the US, had nary an Amiga in sight.

You have to realize, of course, that all this was designed to provide information to someone wishing to buy Commodore stock at a local broker's. Still, one has to wonder. A loss of $273 million in nine months of one year versus a profit of $49 million from the same period a year ago is a major malfunction even in "big" business. Somebody has messed up, but nobody knows who.

It's all a tangled mess of financial reports and figures. It's enough to make a cowboy's hat fall off trying to figure it all out. Attempts to contact Commodore for comment, as usual, were an exercise in futility. What does all this mean? Is the Amiga about to join the Dragon and the TRS-80, the Sinclair, the ADAM, and countless other machines in that great computer pasture in the sky?

Probably not, the reason being, in America, at least, that NewTek and the *Video Toaster* are married to the Amiga. The *Toaster* support industry with all its paint programs and font programs and rendering programs is the heartbeat of American Amigadom. No matter how many times Commodore seem to have shot themselves in the foot, it should be remembered that the USA is in the grips of a major recession right now and high-powered graphics-oriented computers are a low priority with the average consumer, who is probably more interested in a passive Super Nintendo, or Sega Genesis, than in an interactive system. With the Amiga game base eroding daily to virtual non-existence, and the business base not there at all, it makes perfect sense for Commodore to show a minimal face at CES (saving $50,000 or so) and concentrate on the stronger markets. That strategy concentrates funds on targets that have the highest potential to return a profit.

> **"Is the Amiga about to join the TRS-80 in that great computer pasture in the sky?"**

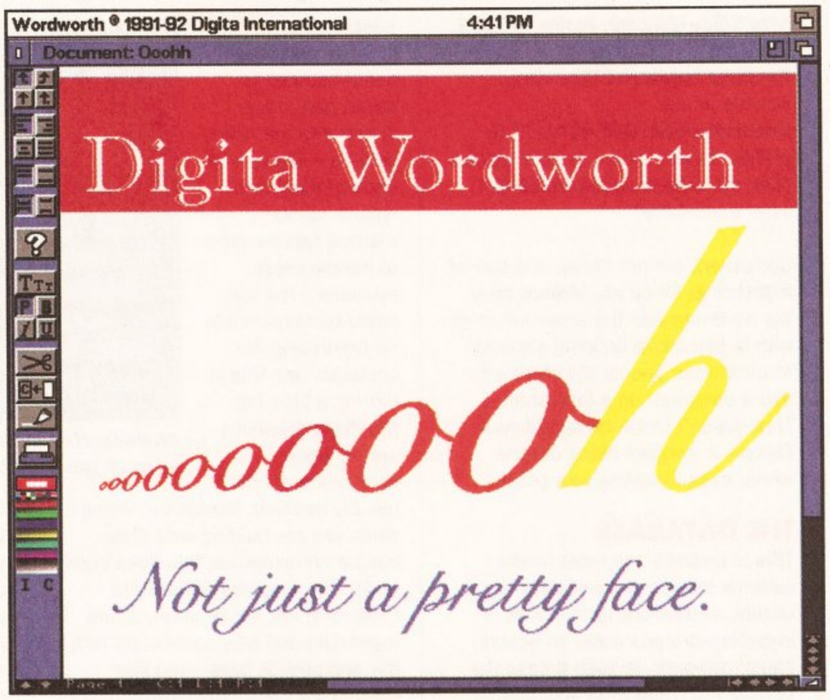
An old Texas cowpoke once told me, concerning ranching, that if you want to be successful, you have to feed the cattle on the greenest grass and bring them to the market where the prices are the highest. Well, the green grass is the new chipset and the Amiga is held in highest regard as a graphics generation platform here in the USA. So maybe Commodore have been listening to my friend Tex.

As for filing Chapter 11 (protective bankruptcy in the US), I don't believe a word of it. As a matter of fact, I've bet against it. So if they file for reorganization, it's going to cost me enough Dr Pepper (standard betting unit among Amiga cowboys) to float the QE2.

Well, it's time to go. We're going to skip the "whoopee ty yi yay" this time. Math and economics give me a wicked headache. (Exit, strolling off into the sunset, swilling Dr Pepper and chewing aspirin.) See you next month – with better news, I hope. AS

GA
ERSION

Nine reviewed One winner*



* Word processor roundup, Amiga Shopper, May 1993

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MAKING

Your Amiga is not just for fun. Put it to work for you and your hobbies or interests, whatever they are, could start making you money. The ideas covered here are realistic businesses you can run as either a second job or as full-time work.

Whatever you want to use your Amiga for, it could be making money for you! Mark Smiddy explains how, then profiles people who are already doing it.

If you're starting out in business, of course, the last thing you want to do is spoil a good idea by being badly prepared, so we've got some advice on the business side of things too – raising finance, surviving debt and coping with tax, plus the pitfalls you might face and how to overcome them. Don't forget to take advantage of any local opportunities as well – your Job Centre will put you in touch with a local TEC (Training Enterprise Council) where you will get more advice on grants, free training and the Enterprise Scheme.

So, what profitable and rewarding market niche is waiting for your talents to make money out of it?

Business Services

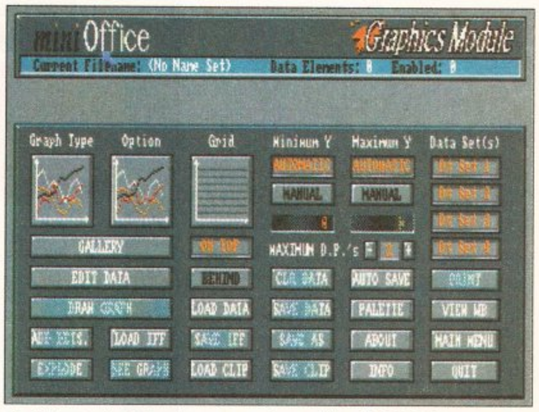
Required software: Spreadsheet, Database, Document processor
Recommended: *The Works Platinum* (£69.99, Silica ☎ 081 309 1111); *Gold Disk Office 2* (£49.95, Silica); *Mini Office* (£42.99, Profile ☎ 0295 252422)
Required hardware: Hard disk, reliable printer
Recommended: GVP 42Mb SCSI (£299, Silica); 24-pin or laser printer *(See the adverts in this issue for what's available)*

Computers are not cheap and can be frightening. Since you already have the hardware and the expertise to go with it, you are in an ideal situation to offer other people the chance to use a computer on a time-share. That doesn't mean hiring out your setup – it involves hiring out the whole thing including your brain.

THE DATABASE

This is probably the least useful external service you can offer to clients, unless you tie it in with a suitable word processor to handle basic mail-outs. In such a case the service you could offer your clients would be to hold each of their customers' details on file, perform the mail-merge, supply and address the envelopes and handle the actual posting out.

The database could be used to target just those customers the client wanted – say by area code or customer type. A similar method can be used to handle press releases – but you could be responsible for organising the contacts, and this is drifting a little into the Pubic Relations arena, where specialists are more usually involved. Remember though, since you are holding data about people on computer, this does come under the auspices of the Data Protection Act. Make sure you are registered and fully conversant with the appropriate laws – you can contact the Data Protection Registrar on ☎ 0625 535711.



An integrated business package like Mini Office may have all you need to set up an integrated business...

THE WORD PROCESSOR

Word processing is central to any business – no matter how small it is. Business flyers, headed notepaper and advertisements are covered under DTP, but more down-to-earth things spring to mind. As already mentioned, there is a possible tie-in with the database to mailshot a lot of people. But what about just basic secretarial duties? Your client could dictate a letter by telephone, you could record it on an answering machine, then you could type it,

DOWN TO BUSINESS

Before even thinking about starting up in business you should first consider your current situation and what you have to lose. Even if you're already out of work, going into business is a bold step which you should think long and hard about. Listening to some of the real-life success stories (and the occasional banking advert) can make you think it's easy. It's not.

Many small businesses fold within their first 12 months and many more after just two years. Those early days are so crucial, anyone who can survive them is likely to survive a stock-market crash. It doesn't just happen to the smaller business either – examples like Alan Bond, Robert Maxwell and the Tyneside-based Swan-Hunter shipyard prove it can happen to anyone who gets lackadaisical, greedy or just plain unlucky.

Being self-employed and running your own business takes time and commitment. Many employed and unemployed people think the self-employed have it easy because they can set their own hours, work when they choose and claim everything back in tax. There is a certain amount of truth in this – but a lot depends on the type of business, and on the whole, to make a success of your business you've got to work at least as hard as in a "normal" job.

One-time self-employed programmer Toby Simpson explains candidly: "I nearly went bankrupt because I couldn't get out of bed in the morning. I just didn't have the drive to put the hours in." Toby, now head programmer for Cambridge-based software house Millennium, finds the 9-to-5 rigidity of full-time work more suitable for him. You've got to be a self-starter to go it alone.

THE BANKS

Just about any bank will offer some sort of financial support – but the range of services varies considerably. (So does what you get charged for them!) Your business accounts need not be held at the same branch or even the same bank as your private accounts, but it helps. However, just because the high-street banks are in competition with each other doesn't mean they don't talk to each other. Make sure you keep your private accounts in order for at least six months before you approach the manager with a great money-making scheme. No matter how worthwhile your suggestion may be, a good credit record is an essential starting point.

Bank managers have a dreadful reputation, but in reality they are just human beings. (I have this on the best authority – one of them assured me it was true, and they're never wrong.) The secret of their power is... psychology! Bank managers, like many high-powered professionals, like to exude an air of superiority. They worked hard to get where they are and they want you to know it!

When you stroll into the manager's office, you will be met by a huge, well-organised desk and a small, very uncomfortable chair to sit on, in marked contrast to the manager's huge, cosy one. All this is designed to make you feel small. The desk is a barrier – the larger and bulkier the desk, the bigger the statement of superiority. It keeps you that much further away and makes the person sitting behind it feel safe and secure. The manager's close-fitting chair is – quite seriously –

MON£Y

check spelling and grammar and send it out the same day. Probably the best way to charge would be by the word (plus a small amount for low-volume work), and postage costs.

This service may seem esoteric, but you may be surprised how many folk could use a part-time secretary – if only they could afford one! This is, of course, a good way to sell the idea to potential clients. A low-cost fax machine is handy to have, so that you can enable your customers to check copy – and you could even offer a fax service as well.

THE SPREADSHEET

Two of the most important parts of business planning are the cashflow projection and the profit-and-loss account. If a business does these on paper, a simple calculating error is tricky to spot and more difficult to fix. Such items can easily be fed into a spreadsheet, reducing the chance of error and making planning easier. This service is invaluable to new and existing businesses alike. It's also quite straightforward to cost out – a cashflow spreadsheet can be charged on a fixed amount for each cell entry. This also gives your customer a good guideline of how much the job will cost in advance.

It doesn't have to stop there though. You can offer to give the customer more than one example sheet with slightly changed variables to see how things pan out given different scenarios. Since the spreadsheet is simple to update, it's much quicker for you to do – and you can make a killing with each different projection. These could then be offered as plain-paper printouts with a graphing option available at extra cost – or as part of a package price. Don't forget though, these extras cost in printer consumables such as ink cartridges, toner or ribbons, so don't undercharge.



If you're offering database or DTP services, a hard drive like this GVP 42Mb SCSI drive is a definite plus.

SELLING THE IDEA

You could start by advertising in the local TEC and possibly at your local Chamber of Commerce. After that, you could spread your wings further afield by mailing local small businesses and possibly advertising in the local papers. Be professional and you will attract a lot of customers. Premises are not essential in the early days because you can operate the service by mail – if it takes off, a small office in a government-run Business Enterprise Centre should be sufficient.

Presentation is a key to success here. For instance, answering the phone with a staccato "Hello, yes?" projects the image of a two-bit outfit. You mean business, so try to sound pleasant and friendly: "Western Business Services, Mark speaking. How may I help?" If you're in a rush, just give the company name or initials: "WBS. Can I help?"

Win a brand-new Canon BJ-10sx bubblejet printer! See page 122

Warning: since you are offering a professional service, you are legally responsible for any errors and may be held liable. Get insurance to cover you for this, just in case.

Desktop Publishing

Required hardware: Any Amiga with 2Mb RAM; high-spec printer
Recommended: 68030-based machine (that is, A4000/'030 or accelerated machines) with 4Mb RAM; Canon BJ10ex Bubblejet printer (£299, Canon ☎ 081 773 3173) or Oki OL400 Laser printer (£549, Oki ☎ 0753 31292)
Required software: DTP package
Recommended: *Pro Page 4* (£199, Silica ☎ 081 309 1111)

It has to be said few people consider the Amiga a machine worthy of being called a DTP engine, considering the more traditional Macintosh. Andrew Hinton of the DTP Bureau in Nottingham disagrees: "I've been a printer for 16 years. When we made the change to computer hardware a Macintosh system cost over £18,000 and the Amiga just £1,500 – which would you choose? Besides, the Apple Centres were less than helpful when compared to the patient

reminiscent of the womb and gives a comfortable feel. You on the other hand are in totally unfamiliar surroundings and probably feeling very nervous – so your presentation will be instantly shattered.

To be fair, many larger banks now make themselves at least seem more accessible and employ a "Business Adviser" at their larger branches. This person is trained to be sympathetic and will probably greet you in a sectioned-off area of the main lobby. In this way the bank are meeting you on common ground and will most likely do so without any visible barriers such as tables; if a table is used, it will probably be positioned off to one side. Of course, if you want more privacy, they will be only too pleased to accommodate.

When you make the initial approach, let the adviser know you mean business by dressing smartly. A new suit, however, is extravagant, totally unnecessary and, if anything, counterproductive. Remember, this isn't a job interview – so don't treat it like one. If you have a great, money-spinning idea, the bank will want your business as much as you want an account.

Give yourself a few minutes to get settled in. Chat about something unrelated at first – a banal cliché about the British weather is a good way to start. At the first meeting, you'll probably be given some brochures about the bank and its services; at a second meeting you should discuss these first and clear up any questions. Once you feel at ease, study the adviser's posture. This is an ideal time for you to "size up" the adviser – so take the opportunity. You don't need to be an expert on body language to look for a few tell-tale signs – like the ones just described with furniture. If you have the adviser's attention, he or she will sit forward and study you. You should relax and try not to cross your legs or arms – this is a defensive posture which may be interpreted as lack of confidence. (If you feel like crossing your arms, that interpretation may not be so wrong.)

If you feel the adviser is trying to give you a casual brush-off, get in a bit closer. If he's using a desk as a barrier, lean on it, or better still make an excuse to get on the adviser's side – perhaps to point something out. This will put him on edge, and therefore make him more alert. Use this as a last-ditch ploy to make yourself heard – used wrongly it will destroy any confidence. Never use this method on a bank manager or assistants, and if you're male don't use it on females – the line between psychological power games and sexual harrassment is all too easy to cross without meaning to.

FINANCE

Financing any business is an essential part of getting started and expanding on what you already have. If you can afford to get the business going with what you already have, then do so. There's no point going out and treating yourself to a new Amiga 4000, PostScript laser printer and 104Mb hard disk if your existing setup will do. But no matter how well prepared you are, be wary of the unexpected and have something set aside to cover it. For instance, if your machine suddenly breaks down you could find yourself stumped until it gets repaired – or worse still, have to replace it.

The old Enterprise Allowance Scheme – with the £1,000 floor – has now been replaced by a much fairer, if more complex, scheme, and you won't necessarily have to borrow anything. Details of this scheme and other options are available from your local TEC, but for now let's look at a few ways of raising capital – cheapest first.

continued on page 16

and friendly Amiga dealers.

"Until very recently we used Amigas for all the colour separation work – because they were better at it than the Mac. However, we had a re-think when some nice person waltzed off with all the hardware. These days the Mac is actually better than the Amiga – but that's only because of the bugs in *Pro Page 3* and *4*. We still use *Pro Page 2.1* for a lot of the work, because although it lacks features of the later versions it is more reliable – I don't know what Gold Disk are up to."

If professionals think *Pro Page* is better than a system costing almost £1,000 for the software alone, it must have something going for it. The team producing *Junior Sports Report* (see page 20) lacked the budget and expertise to use the Mac, but on a minuscule budget managed to produce a viable, good-quality magazine. You could do it too. How many times have you walked into a local shop and seen those awful handwritten or stencilled notices? The average shopkeeper can't afford to employ a professional printer who specialises in large print runs – and that's where you can come in with typesetting to order. The hard fact is, the average person could not tell the difference between the 360 DPI (dot-per-inch) resolution of a Canon Bubble Jet and the 4,000 DPI of a Linotronic imagesetter. Even if they could, they probably wouldn't care.



Any business where you have to produce finished products demands a good printer like Canon's BJ-10ex.

This works in your favour because there is a good market for made-to-order typesetting. Cafés, shops, pubs and restaurants need everything from notices to menus, and they will be prepared to pay. A menu for instance is most expensive to set up, but once it is saved, minor changes are easy to make.

If you are offering a bespoke typesetting service, it is an advantage if you can give your customers a complete job. Short-run orders (reproduced on a photocopier from master artwork) may be used on counters or even hung on the wall. But paper tears and gets dirty very quickly under such circumstances, so find someone to laminate the final sheets in plastic. Smaller local printers may do this for you – it doesn't cost much and only takes a matter of minutes in a custom-built machine.

Business cards and letterheads are something for the more professional customer – but remember, there are machines in most city centres and even motorway service stations where Mr Average can get a 100 cards for a fiver (or so – the price varies widely). Inside many of those machines... is an Atari ST! Your Amiga can do at least as well – but you'll need to be cheaper and better at it. The machines only offer a few standard designs, so your design expertise can be the major selling point. Look at other people's business cards and see what you can come up with. As for pricing: remember, you'll probably have to pay to get the artwork printed on heavy card and guillotined. A local "instant print" shop is a good place to start – provided you don't give them the impression you're trying to steal their business!



The Amiga boasts DTP packages like Pro Page that rival those available on much more costly platforms.

SELLING THE IDEA

The key to success here is in the quality of your advertising and production. Everything you do says something about how good you are – and in the case of a menu, say, a lot of people are going to see it. Try offering a couple of local cafés or restaurants the service at a discount if they let you pop a *small* advert somewhere on the page.

A personal approach is a good way to start. You'll be surprised how easy it is to convince people if you have something they want and they think they're getting it cheaply. Don't walk in cold though – take some samples of different designs and perhaps with various clip-art. Make up a dummy menu in a plastic lamination and show them the advantages it has over their existing system.

Video post-production

Required hardware: Genlock
Recommended: *(Check the adverts in Amiga Shopper for one in your price range)*
Required software: Titling system; art package
Recommended: *Alternative Scroller 2* (£50, Alternative Image ☎ 0533 440041); *Deluxe Paint 4* (£90 Zone Distribution ☎ 081 7666564)
Others: 8mm or Hi-8 video recorder; VHS or Super-VHS video

Home movies shot on 8mm are a thing of the past. The format is expensive and messy to use – but home movies haven't died out! If anything, they are more popular than ever before, thanks to the invention of the camcorder and some mesmerising TV shows. We love to see each other fooling about – burying grandad at the seaside, catching granny having a nap after dinner with the cat in her lap, junior

Grants: A grant is a gift. It is not a loan and does not have to be paid back. Grants may sound wonderful, but they are deliberately difficult to come by and you will have to fulfil a number of obligations before you can get started. A typical example is a scheme called the Prince's Youth Business Trust, named after its patron, HRH Prince of Wales. Although the Trust's entry conditions are very stringent, they offer discretionary grants up to £1,500 and low-interest loans. To apply you must be unemployed and under 25 or disabled and up to 30, although the rules are being revised all the time.

Overdraft: This is the cheapest form of short-term borrowing. Banks will allow you to overdraw by up to an agreed amount for up to a specified period of time. Such a "facility", although convenient, has its drawbacks though. On top of the interest charges, you may also have to pay bank charges at around 60p to 70p per transaction. In addition, there will probably be a one-off "arrangement fee" (to cover administration), which may be linked to the amount of overdraft required – expect upwards of £50. Overdrafts are short-term loans offered at the branch's discretion, and usually only run for 6 to 12 months at a time. One other thing too: interest is calculated on a daily basis and interest rates can vary a lot in the course of a few months.

Career Development Loan (CDL): This idea was a joint venture between Barclays and two smaller banks. Basically, the banks agree to lend you up to 80% of the cost of training for work. During the time you are on the course and up to three months afterwards, you pay nothing back and the government pays interest charges. After the three month "holiday" expires, you start paying the loan back at the full rate. CDLs are a nice idea, but carry a very high degree of risk since you might not get a job or be able to start business in the specified time. Further information is available from Job Centres, but my advice is give them a wide berth if you're planning self-employment.

Bank loans: These are probably the best way to get started if you are short of capital but have a good idea. A bank loan will usually be offered over a period of months or years and the interest calculated on the sum borrowed at the current rate. This means you know in advance how much you'll be paying back each month, and that makes budgeting far easier. If you are registered for VAT, you will be able to claim back the VAT on anything you buy straight away.

Leasing: This term applies to the business variation of hire purchase, and for all practical intents and purposes the two are just the same. Leasing sounds great, but the only people who really benefit are the lease companies themselves. The APR (Annual Percentage Rate) on leasing is astronomical – 33% or more is not unusual. The way it works is this. When you sign a lease you in effect borrow the money from the lease company, who in turn pay the supplier. You then "hire" the goods for the terms of the lease – typically 24 or 30 months.

At the end of this time you can either hand the goods back or carry on paying. The advantage of this system is you can claim income tax and VAT back on the payments. On the down-side, you never own the items leased, are usually responsible for insurance and maintenance on them, and cannot modify or sell them. A system called Lease Purchase, as opposed to plain leasing, traces a thin red line bordering on the illegal – it is an unwritten agreement for the hire

taking those first tentative steps, or just loved ones tying the knot.

Camcorders are great at taking the pictures, but let's be honest, who can afford a top-of-the-range Sony Hi-8 with wipes, fades and diddlies? The fact is, most folk are perfectly happy with the results from low-cost camcorders. They don't care about colour strobing on Dad's tie – they just want to have some fun with a cheap, re-usable format that will last a lifetime.

But think of the appeal of all the extras that really make video an advance over 8mm. Features such as jog, shuttle and search depend on the VCR, but what about extras

How two 20-year-olds are using an Amiga to make money from television – see page 92



Modern video recorders like the JVC S6800 EK give you many of the facilities you need for video editing – just add an Amiga for the post-production frills!

added to the video recording itself? We've all seen the kind of video where everything is going well at the wedding reception, when suddenly, during the best man's speech, someone trips, cannons into the bride and brings the whole table down. Wouldn't it be a bonus to add a little on-screen pointer to imply "keep your eyes on this man here..."? Even if you know what's going to happen, it adds to the comic moment.

In addition there's your titling and scrolling credit screens – and you don't need a high-cost software package to add them. *DPaint 3,* supplied with many Amigas, is capable of good animations. Even without this facility, you can even add fluffy borders around the happy couple for a wedding, or some filigree around the star at a christening. It's polish – the finishing touch so many home movies lack.

SELLING THE IDEA

This service can be sold on two levels. First there is the service to existing companies who might lack the relevant hardware or expertise. Professional photographers often double up with a video service – but many have very limited mixing and titling facilities. You can also sell the service to private individuals who have blown everything on the camcorder. Since 8mm video is not compatible with VHS, you can also charge for transferring the film to the full-size format.

This business is expensive to set up – at least in the early days. Video equipment is not cheap, and professionals will expect you to be geared up for Hi-8mm and Super VHS formats. Don't forget your insurance – you could be in deep water if a faulty machine destroys someone's treasured master tape! (Like film developers, you'd do well to add a clause on the agreement your clients sign, saying something like "Our liability is limited to the cost of replacement film".)

Advertising is another necessary expense, but it must be carefully planned. Approach local photographic outlets to see if they will let you leave some flyers in the shop. If you do a door-to-door letterbox drop, keep to middle-class and upper-middle-class areas – the people most likely to have such equipment.



Deluxe Paint is capable of excellent animation or graphics suitable for video title screens and the like.

Music Production

Required software: MIDI sequencer
Recommended: *OctaMED* (v2 was yours on the cover disk of *Amiga Shopper* 27 – see page 95); *Dr T's KCS Level 2 v3.57* (£279, Zone ☎ 081 7666564)
Required hardware: MIDI synthesizer, MIDI interface

How much do you think it costs to hire a commercial music studio's services for a few hours – £50? £100? Start at £1,000 and work up from there. This is the predicament facing many would-be music stars. Many lack the talent to succeed in the big time, but some just need a way to make themselves heard, aside from blasting the neighbours on a Sunday afternoon's practice.

Hippie-favourite Mike Oldfield played every instrument on his hit '70s album *Tubular Bells.* With today's high-tech MIDI synthesisers, you no longer need to actually play more instruments than Roy Castle. All that's required is a good sense of rhythm and a lot of luck.

You can use the Amiga as part of a group, but a less conventional approach is to market backing tapes for solo singers. Stockton-based Microphylic Music use an Atari ST for their work, but Amiga software is cheaper and easier to use. The idea works like Karaoke: you supply the music on a high-quality, short-play cassette – say 15 minutes per side, with six tracks which the singer can mix and use on stage.

SELLING THE IDEA

A useful suggestion comes from a soloist using pre-mix tapes like these: "I need to be able to find tracks quickly and easily, so it would help if I could flip the tape over at the end of one track to get to the

company to sell you the goods when the lease expires for a small payment.

Secured Loan: A secured loan is only available to homeowners and is probably the worst way imaginable to borrow money – apart from going to a "loan shark". A secured loan will be available at a much lower APR than an unsecured loan – indeed it may be the only way to get the required sum – but there is a catch. Your home is the lender's security. If you don't keep up the payments, you lose your home. Make no bones about it – you and your family will be out on the streets. Treat as you would a school of piranha.

In my opinion, small businesses and those new to the area of self-employment should stay clear of leasing and secured loans. Stick with the bank – the devil you know... In any case, before signing anything, get your accountants to check the details and take any advice they offer.

SURVIVING DEBT

If you see a crisis looming or get into money trouble, tell the bank straight away. A phone call is usually sufficient, but the personal touch helps to show you're not frightened. Be completely honest. Cashflow problems are a major cause of bankruptcy – under the umbrella term of insolvency – but you'll be out of work and out of pocket just the same. Provided things haven't already got out of control, the bank may be able to give you breathing space. Think of it this way: if you do go bankrupt, the bank and any other lenders will have a harder time recovering any monies you owe them.

Several leaflets on debt and debt survival are available from libraries and the Citizen's Advice Bureau. Although you should always look on the bright side, you may find these a worthwhile read in case the worst does happen. Remember also, you may be able to claim certain benefits (including Income Support, would you believe) if times get really hard.

THE VAT TRAP

VAT is a tax charged on luxury items, goods and services at a percentage rate defined by the government (currently 17.5%, but you never know...). Certain items, such as children's clothes, are "zero-rated" (VAT is charged at 0%) and others are exempt altogether.

Any computer service industry will attract VAT if it meets certain earnings-related conditions. If your business turns over more than £37,600 at the end of any 12 month period, you must register with HM Customs & Excise by law. However, you may also register for VAT on a voluntary basis if your turnover does not reach these limits. Turnover is the amount of money moving through your business, not the amount of profit you are making – and the two can be vastly different.

VAT is a fairly simple tax split into two parts: Input and Output. You charge VAT to your customers at the current rate and claim VAT back from the government on anything you buy for the business. Purchases include things like computer equipment and even the telephone bill. You may also claim VAT back on any equipment you bought before registering, provided it is less than two years old – including your Amiga.

Registration has two main advantages. First, you will save a lot of money because you will not have to pay VAT on anything for the business (strictly speaking, you pay it, then claim it back at the end of each VAT quarter). Second, any VAT you "collect" – that is, charge your customers – can be

continued on page 18

start of another." Of course, it's not always that easy to make sure every track starts at the same point, so timing is a major consideration here. A database could be used to locate songs of similar length from your library and make sure you get the best use of time available.

Cactus Rain's Tim Tucker has another suggestion: "Why not market songs as MIDI files on disk? Once you've done the hard work of mixing and entering the data, less talented folk with better hardware will be able to enjoy them just the same."



MIDI synthesizers like Roland's JX-10 enable you to create music which your Amiga can then manipulate.

PD Software House

Required software: None
Required hardware: Extra disk drive(s)

This is one occupation that's worth it only if it's a hobby you'd be pursuing whether you make money at it or not. At first glance it looks very easy to set up in business and wait for the orders to come in. All you have to do is obtain a good library of disks – just buy them from other libraries? – and book some advertising. What could be simpler? Well, this is a classic case where bad planning and rose-coloured spectacles cause instant failure. The major problem is competition – the market is already bursting with well-known names all vying for the customers.

In a situation like this, only the large libraries will survive. They can buy their raw materials – blank disks – in bulk, by the thousand, where you have to make do with a few hundred, and pay more per unit. Similarly, you will have to advertise for a long time before you will convince anyone you are not just a "flash in the pan". So the secret is to offer something the others can't, like the hottest new PD software from overseas. Here again, though, the big established PD libraries have the advantage, with contacts among Europe's and America's developers and user groups. If you're involved in comms, you might find some goodies on various bulletin boards that haven't been widely distributed yet – but with PD it's only a matter of time, and you need to be familiar with the comms scene to know where to look in the first place.

SELLING THE IDEA

Advertising is very expensive, and it will make a very large dent in your budget. Remember, if you can only make 50 pence gross profit on each disk, a small monochrome ad in a national magazine costing £100 will require a return of 200 unit orders before the advertising costs are covered. Add to that the cost of telephone, postage, packing and so on, and pretty soon you'll be looking at selling 300-plus disks for every advert before you can even afford to pay yourself.

Remember also the added complication with PD: programs are sometimes released on the condition that the distributors do not make a profit on them – after all, the programmers have done all the work and given it away for nothing. Of course you have to cover your costs and you're entitled to some return for the service you provide, but PD won't make you rich, especially with all the competition out there.

How you can make money from programming in AMOS – see page 68

Commercial programming

Required software: Programming language
Recommended: SAS C v6.2 (£329, HiSoft ☎ 0525 718181); AMOS Pro (£69.95, Europress Software ☎ 051 357 1275); Devpac 3 (£70, HiSoft)
Required hardware: Second disk drive

If there is one thing that's certain, it's that the days when lone professional programmers worked feverishly away in attic rooms are long since past. Today, a typical games programmer is no more than a cog (albeit a very important one) in a massive machine geared to turn out a product. Even major application programs are rarely the work of a single individual these days – although some are still largely credited as such.

A modern game may come on three 880K disks, packed with superbly detailed graphics, sound and music, in hundreds of K of intricate machine code. It has to be said, some programmers are still brave enough to work on their own, but they are few and far between. Nick Brown, for instance, wrote *Pro Flight* for the Amiga on his own time. The Tornado flight simulation marketed by HiSoft is a superbly accurate simulation of the real thing in terms of flight envelope and behaviour but it lacks the polish a commercial games house would add – and the majority of buyers demand.

So where does that leave the would-be programmer? Forget about games – although they may seem like fun to write, a top-selling game could take five person-years to complete. In the big nasty world of commercial games you will be competing against the likes of Ocean and Team 17 – people with enough clout to knock out Mike Tyson with a feather duster. Fortunately, games aren't the only option. There are over one million Amigas out there, but not everybody is playing games. Create something that fits a niche and you're in with a good chance of making some real money. Niche markets have distinct advantages:

- The big houses are not interested in them because they are a small percentage of all Amiga users.

used (very carefully) as short-term capital. Voluntary registration should be avoided unless the majority of your income comes from other VAT-registered businesses – it does not affect them. Private individuals have to pay the VAT and that makes you effectively 17.5% more expensive than you would be otherwise.

The following leaflets may come in useful: "Should I Register for VAT?" (700/1/90); "The Ins and Outs of VAT" (700/15/90) and "Filling in Your VAT Return" (700/12/90). All are available from your local branch of HM Customs & Excise.

DOs and DON'Ts

Do identify your strengths and use them.

Do make sure you charge enough for your services. Analyse what your service costs to run, including all the hidden costs such as rent, heating, lighting and telephone rental. If you find yourself charging more than the competition, ask yourself why.

Do look closely at other people competing in your market. Can you improve on their services or give a better rate?

Do think carefully about where you advertise. Local papers can be effective, but are useless if your service is countrywide. Newsagents and local shops, while cheap, are usually a dead duck. Remember too, a business phone line gets a free entry in Yellow Pages – but the line is more expensive to rent. You can always "adopt" your private line rather than go to the expense of having another one installed.

Do get the right insurance. Shop around – business insurance is never cheap, but a public liability suit (if your recklessness causes a death, for instance) could cripple the business and leave you owing for the rest of your life.

Do make a business plan which is flexible enough to leave several "escape routes" – alternative arrangements if the first does not behave as well as you expect.

Do make a cashflow and keep it up to date. Try to identify possible trouble spots in advance.

Do be aware of "seasonal variations". For instance, most marriages take place during the warmer summer months and a cold winter will be a long one for a specialist video firm.

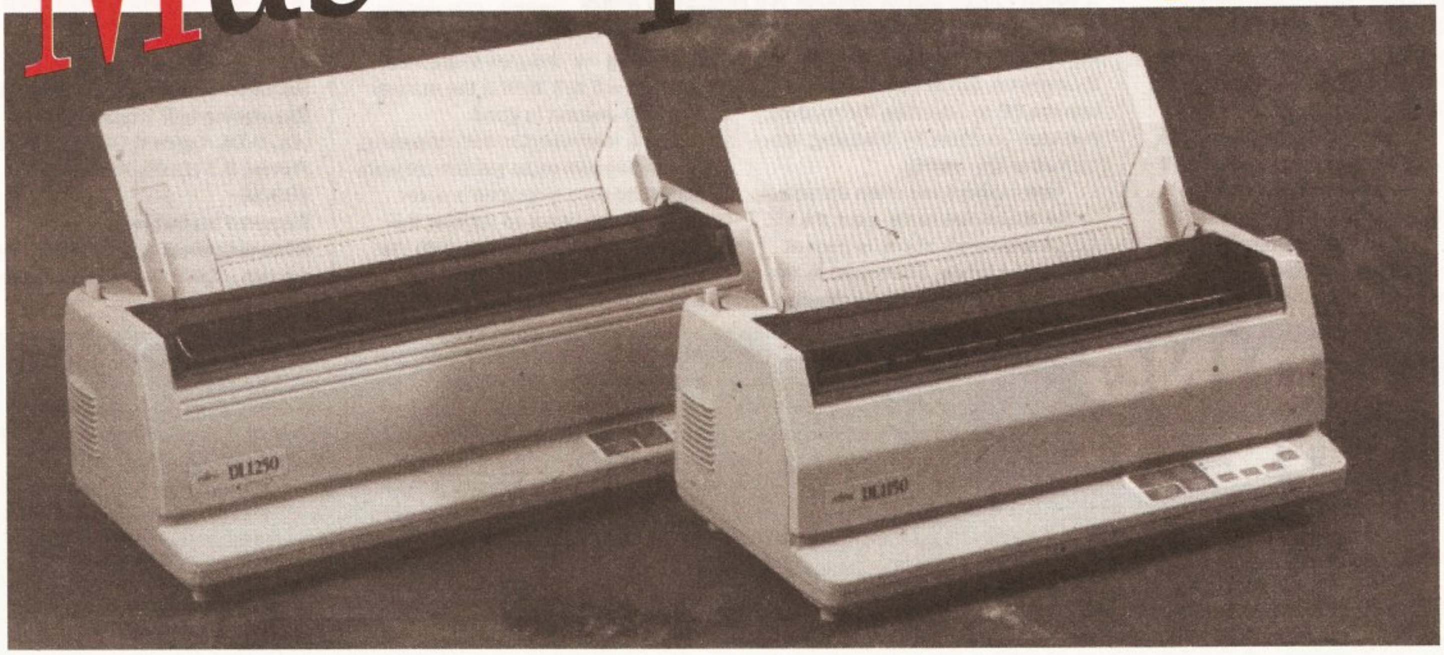
Don't try anything you are not fully qualified for. There are no second chances.

Don't take on more work than you can comfortably manage. A full order book may look impressive, but if you can't meet the deadlines you could find yourself with cancellations or even fines for breach of contract!

Don't overstretch your budget. You may be able to get a short-term loan or an overdraft, but if an order is cancelled you might find yourself unable to pay it back, and that could mean the whole business going down – or worse, bankruptcy.

Don't re-mortgage your home or get a loan secured on it. If you default on the payments you may lose your house. The security is for the lender's benefit – not yours. If you need a large loan (more than £5,000), ask your bank for advice. There are alternative methods to raise large amounts of cash (business capital) – see your accountant for advice.

Two Smart Masterpieces in Colour



The DL1150 Colour and DL1250 are two smart masterpieces from Fujitsu – the second largest computer manufacturer in the world. Thanks to a unique design, these printers will save you a lot of valuable desk space.

The DL1150 is the smaller model and prints in colour on a A3/portrait or A4/landscape. If you need larger printouts, the DL1250 is the perfect choice – it prints on A2 format.

The DL1250 is monochrome but can easily be upgraded to a colour printer by use of an optional colour kit.

The 24-pin dot matrix technology offers high resolution. Many resident fonts provide a multitude of printout options. You can easily connect your computer with our printers, thanks to Fujitsu's unique DL-menu. Drivers are available, both for Windows and Amiga.

For further information please contact your Fujitsu representative, Amiga-Warehouse, Tel. 0753-554338, Fax 0753-551211 or FUJITSU PRINTER PRODUCTS OF EUROPE, Tel 081-573-4444, Fax 081-813-7371 directly.

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FUJITSU

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

• Users in those areas are continually on the lookout for something to suit their needs, and they will be prepared to pay for it.
• People in such niche markets tend to stick together and the message will spread by word of mouth. There will be no need for expensive, glossy advertising – they will come to you.

One of the best inroads into niche marketing is the public domain and shareware scene. This has more sub-divisions than a large orange, but all follow broadly similar lines. Certain PD libraries specialise in certain areas. Since these libraries have become commercial concerns in their own right, they handle all the necessary advertising for you – along with thousands of others.

If you release your software into the public domain, you're allowing it to be copied and distributed for nothing and making nothing from it. Large software houses often place fully-working (but Save-disabled) versions of their applications in the PD so people can see it for themselves. Small companies can use the PD to advertise themselves and their products by releasing, say, a small utility, as PD.



It doesn't much matter whether you program in AMOS Pro or any other language. It's the result that counts.

New authors are often attracted to the shareware route – but the UK Amiga shareware scene is poor at the best of times. Shareware is like PD, but if users keep the software they are supposed to pay a "registration fee". Shareware is very popular in the USA, but in the UK and Europe people tend to treat it like PD. Several methods have been tried to encourage people to register and of these the most successful seem to be version upgrades and manuals. In other words, give people something for registering – a complex shareware program will sell itself if the manual and user-support is good.

As a last resort in self-marketing, you can always try to get the program published on a magazine's cover disk and ask users to register the program if they like it. Although the initial payment will not cover the amount of work involved, you are guaranteed a wide audience, and with luck the takeup may be enough to cover your costs eventually.

People using the AMOS BASIC system have another option – Licenseware. This is really just a commercial system operating under the auspices of shareware. However, putting cynicism aside, most programmers seem happy with the system. It does, at least, allow part-time programmers to get an inroad into commercial software.

Professional writing

Required software: Word processor
Recommended: *Wordworth 2* (£129.95, Digita ☎ 0395 270273); *Protext 5.5* (£150, Arnor ☎ 0733 68909)
Required hardware: a printer
Recommended: Star or Citizen 9-pin models *(Check the adverts in this issue for prices)*

GOING FOR IT!

Junior Sports Report

Take three people and add one Amiga 600. Now throw in a dash of idea and liberal amounts of determination and enthusiasm, and mix thoroughly. Simmer slowly for three months and you have a magazine. *Junior Sports Report* says it all – most of the real businesses here are already thriving and self-sufficient. Here is a story of how one business operates on a shaggy shoestring – without plush office accommodation or even a decent chair between them.

Junior Sports Report is a local sports paper with young people in mind. With the primary focus on football (a North-Eastern tradition) it covers everything from cricket to athletics and judo. Even though the weekly paper is distributed over a wide area, the first issues were produced on nothing more than an Amiga 600 running *Pro Page 3* and printed on a Canon BJ10e.

Latest addition to this surprisingly low-cost setup was a second-hand A500 Plus complete with 20Mb hard disk, on which writer Kerrie Beckett generates all the copy. Kerrie, who has an A-level in English, has no previous experience of computers but is a true sports fanatic. "I threw discus for the county team when I was at school and I love writing," she says. It shows too: *JSR* is a chatty, friendly read, without being twee or condescending – just right for its target audience of teenage athletes.

Production Designer Dave Wilkinson and Photographer John Davis handle getting the copy into the computer. Says John: "Neither of us had a lot of experience with the Amiga. Dave's the brains – he got into it two years ago for its video side. I bought an A600 when they first came out and I was really impressed. Up until then I had done some work in Z80 assembler on the Spectrum [roars of laughter abound] and now I'm experimenting with 68000 using Devpac. I have BASIC and I'd like to try a C compiler but I can't find an affordable one yet." To which Dave adds, "We'll write it in Devpac then."


Junior Sports Report, 6th May 1993, Page 6

T.J.F.A. UNDER 13 LEAGUE MATCH.
GUISBOROUGH VS KADER Y.C.

Within a minute of this game, Guisborough had stamped their authority on it!
Neil Roth got their first goal after 1 minute, then, straight afterwards, Russel Hutchinson scored off a corner from Glenn Dolan - only 2 minutes gone, and Guisborough were already 2-0 in front.
Michael Dalton - the Kader Keeper - saved brilliantly to prevent Brian Combellack from making the score 3-0 in the fourth minute. Kader's Craig Ellis put a great ball forward, but nobody was in the box to put it in the net. Peter Bradley passed well to Mike Kitson for Kader, but Kitson's shot was nicely saved by Simon Hood.
Brian Combellack scored Guisborough's third on 15 minutes - 3-0. Timmy Hood then brought the ball all the way himself for Guisborough, and had a shot which was well saved by the keeper. Combellack got his second after 25 minutes - 4-0. He tried again a minute later, but Michael Dalton made an excellent save - diving at his feet.
HALF-TIME SCORE: 4-0 to Guisborough.
At the beginning of the second half Michael Smith broke for Kader, but was well tackled by Russel Hutchinson. John Stewart got Guisborough's fifth goal after 33 minutes, then Neil Roth had a go, but he hit it just to the right of the post. Guisborough then made two substitutions - Tim Hood and Richard Taylor went off, to be replaced by Craig Jackson and Mark Hollingworth.
Neil Roth got Guisborough's sixth goal on 36 minutes - it hit the left post and went in, then Brian Combellack got his hat-trick to make the score 7-0.
There were no goals in the last 20 minutes of the game, this was mainly thanks to some hard work by Chris Relph, and some brave goal-keeping from Mike Dalton.
FINAL SCORE: 7-0 to Guisborough.
This was a nice match to watch, Guisborough passed and finished well, Kader battled hard and never gave up.
The Junior Sports Report's 'Man of the Match' was Kader keeper Michael Dalton for a very good and courageous performance!

SCORERS: Brian Combellack 3, Neil Roth 2, John Stewart, Russel Hutchinson.

Chris Newton (Guisborough) and Chris Relph (Kader) in action.

Neil Roth scoring Guisborough's sixth - despite the brave efforts of Michael Dalton.

Junior Sports Report, 6th May 1993, Page 7

PROFILES

... Hollingworth, Neil Roth, Russel Hutchinson, ...n Dolan. Front row: Matty Wadman, John ...r & Craig Jackson.

KADER Y.C. UNDER 13s - Back row: Chris Moody, Mark Honchen, Craig Beadle, Jonathan Garcia, Chris Relph, James Atkinson & Terry Walker. Front row: Michael Dalton (man of the match), Peter Bradley, Michael Smith, Craig Ellis & Michael Kitson.

Junior Sports Report shows what can be done with just a very basic Amiga DTP set-up.

But where would a sports paper be without pictures? John Davis handles all that on his trusty Canon T70. "I don't really know much about photography," he says, "I just let the camera do all the work." Still, John does all the developing and printing in-house – his house in fact, in a converted broom cupboard.

The tamed perfectionists are still less than happy with the final results. "We have a Power 16-shade scanner, but the software is tricky, so in the first issues we've tried using a traditional paste-up. The latest idea is to use a custom grid during the developing stage to emphasise the dots and make it look more like a newspaper. 53-degree, 60-LPI halftone: what's that?"

How does the finished magazine get from the Amiga to the shops? Being local, it's difficult to tie up distribution deals or even get an affordable printer/binder. Says Dave: "We generate all the pages on the Canon and pack them off to a local newspaper in Middlesbrough. They print them for us very cheaply on a high-volume photocopier – although I think Kerrie has spent next week's budget on a new pair of trainers."

Collating and binding the 16 pages (4,000 copies worth) is a team effort back at base. Then it's into the van to make deliveries in a 40 mile radius themselves. Every delivery point is marked with a pin on a huge map over the A500. "We made that from a couple of A–Zs – cut-and-paste at its finest."

The team show an impressive determination to succeed. Without heavy financial backing or high-powered machinery, they use what they have to deliver a marketable product, and all on a basic setup. As Dave comments: "I can remember every page – that one [he grins, grabbing a copy off the floor] took three hours to print – then *Pro Page* threw a wobbly on me. But I got it in the end."

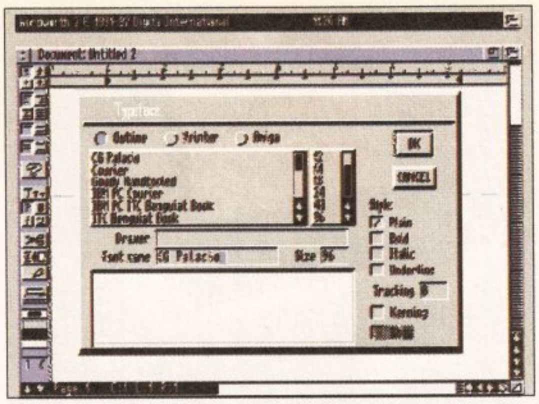
Other hardware: Monitor
Recommended: CBM 1084; Philips CMM1083 *(Check the adverts in this issue for prices)*

Writing for a living is a bit like acting – there are a lot of wannabes and a few real pros who are widely sought. If you have a natural gift for storytelling and a way with words, you could make a career writing fiction, or, if you have specialist knowledge of any subject and can write reasonably well, technical journalism may be for you.

The basic requirements are a good command of English and an idea. Approaching any editor with high hopes and no idea what you want to write about is not likely to win you a commission. Similarly, if you turn in "copy" written in laborious, grammatically incorrect or badly spelt English, it will go straight in the bin. So will anything written in longhand – a good word processor and printer are essentials here.

STYLE

All writers develop an individual style over the years, and you will develop your own – don't force it. Read a lot of books and magazines – in your target area (fiction or non-fiction) and other areas too. Whatever you do, read a lot of different authors and beware of becoming a clone of one favourite author, even by simply reading nothing else.



Professional writing means using a pro-standard word processor like Wordworth (above) or Protext.

All newspapers and magazines have a style which separates them from the rest. This is called "house style" and covers elements such as whether they use double quotation marks or single, whether they refer to *disks, discs* or *diskettes,* and so on, as well as what level of expertise they assume, whether they are formal or "chatty" in tone, and so on. Some publishers will supply a style guide on request, others will urge you to look at the current issues and glean as much as you can from that. Also study sentence and paragraph length – if your word processor has analytical facilities it may help to copy in 1,000 words or so and get some statistics from there. But don't feel that writing for a given magazine means you have to write sentences of average length 17 words with a Flesch Reading Ease score of 64 – identify in your own mind what it is that enables you to identify any article as coming from a given magazine and try to capture that flavour in your own writing so that it will fit in to that magazine.

MAKING CONTACT

The first approach should be in writing only. Editors are busy people and will not have time to read through an unsolicited manuscript. Send in a synopsis – a broad outline of the work you propose. It should be short and to the point – don't waffle – and make sure your spelling, punctuation and grammar are impeccable. First impressions last, and it is stupid to blow it all just by not bothering to run a spelling-checker over your copy.

If the editor is interested, you'll probably be asked to submit a fuller

GOING FOR IT!

Cactus Rain

If you're a fan of synth music, you might have heard Cactus Rain on the Virgin label a few years ago. Writer/musician Tim Tucker explains: "The Amiga formed a central part of my work. I composed on a sequencer [Dr T's *KCS]* at home and played everything back via MIDI. In the studio, we could take advantage of their more sophisticated MIDI instruments without having to start from scratch. This saved an enormous amount of studio fees where time is money."



Tim Tucker, in his Cactus Rain days...

Cactus Rain were one of a number of bands dropped when Virgin sold their music business to EMI. However, during the time they were together, the band racked up three singles and an LP. Even though the music business was in a lull, Tim reckons he personally earned over £15,000 in just 12 months. All this, plus going on tour and getting paid for his passion – lucky guy.

GOING FOR IT!

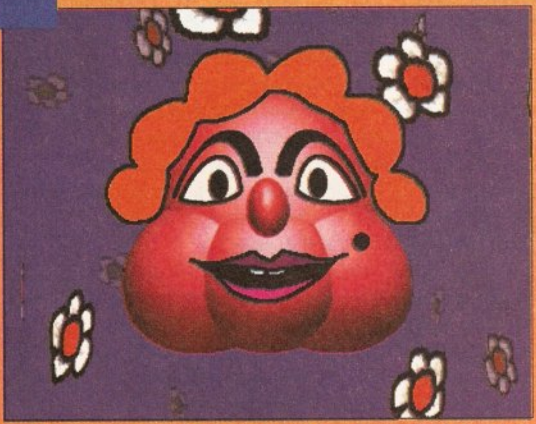
Real Time Graphics

Are Amigas really good enough to be used in broadcast television? The answer from at least one team is a resounding "why not!" Simon Dunston's Real Time Graphics specialises in producing graphics for the major independent television companies. As far back as 1987, Simon was working on an Amiga 1000 for Network 7. Since then he has produced still and animated graphics for a variety of projects on Channel 4, including the *Star Test* and some pretty spiffing stuff on *GamesMaster*.

Most recently RTG have been working on Sky Television's nightly computer games show *Games World*. The House of Games is run completely by Amigas, and Madam Pixel – the pink tipster – is a lip-synced 32-colour animation drawn in *DPaint*. Simon explains: "The situation is not perfect at the moment. We had to write some software to perform the syncing – and we still spend a lot of time getting it just right. Every word Ms Pixel speaks is broken down into phonemes, which determine which lip set we use."

What made RTG pick the Amiga in the first place, over other machines? "In the first instance I was given an Amiga 1000 as an advance on some work. (The company I was with went on to produce Max Headroom – although the technology available then did not perform well enough to make Max, so he was shot using conventional means by a specialist studio.) These days we're running eight Amiga 2000s and four Amiga 4000s. We aren't called Real Time Graphics for nothing – the Amiga was, and still is, the easiest machine to do double-buffered animation on."

Is training necessary for this kind of work?



Would you take a tip from this (er...) person? Sky TV's Madam Pixel was created on an Amiga in DPaint.

"Actually," Simon reveals, "none of us had much knowledge of computers – we came into it through the back door after being involved with the media. My training is specifically in conventional design work – but I think that's what gives us the edge over people who only know computers. These days we're getting more involved with multimedia work for business presentation."

Real Time Graphics ☎ 071 721 7577

Alternative Image

Graphics and video are the Amiga's strongest area, so it is not surprising that here is where we find its real potential being exploited. The name Alternative Image should be familiar to *Amiga Shopper* readers: the company's Henri Bujko produces those stunning pictures

continued on page 22

sample of your writing. Have something prepared to the same high standards – and then make sure you stick to them in whatever you end up submitting. That's what professionalism is all about. You'll normally get paid by the word – but that's words published, not words submitted, and you'll win no friends by writing reams of wordy waffle that someone will have to take the time to cut. Keep it concise and entertaining.

What should you write about? Any specialist magazine is always on the lookout for interesting articles and new ideas, especially ones which benefit a large number of people. Perhaps you have a favourite hobby, be it AmigaDOS programming, macramé or model aircraft. If you have something to say, whatever your area of interest, don't be frightened to say it.

GETTING INTO PRINT

Don't imagine that the *Times* is just waiting for you to knock on the door. Specialist magazines are your best bet initially – newspapers are tied to their own in-house people and a small number of trained journalists. *Amiga Shopper* is a good example: a lot of the freelance work is done by people with little writing experience at all, but a wonderful grasp of the subject.



Writers need dependability, not laser quality, so a reliable 9-pin printer like Citizen's Swift 90C is ideal.

Don't be put off if you get a polite refusal. Unless you were given a reason, never try to find out why your manuscript was turned down: bite your lip and accept it. It may be that the editor has already commissioned or received something along similar lines.

PAYMENT

In the case of magazines, you will have a long time to wait before you actually see a return for your work. Your deadline will typically be about 8 to 12 weeks before the magazine is due in the shops. After that, you may have to wait another two or even three months for payment. In other words, it may take up to six months before the money starts to trickle in. Even then, a novice writer should only expect about £50–60 per 1,000 words published. Part-time work is a great way to maintain a livable kitty, so keep your options open. Full-time writing is a difficult but rewarding pursuit, although it can be hard to make enough to support yourself.

If that sounds a little off-putting, consider that a book may take a year or more to write, plus another year after that before the first royalty statement arrives. Only then will you know how much you've earned. A top-selling, general-interest computer title can make the author £10,000-plus per year. Specialist titles often make a lot less, although they can take longer to write. However, all that said, writing about something you're interested in is like getting paid for breathing – and, like making you money out of any hobby, your Amiga makes it all a doddle. AS

GOING FOR IT!

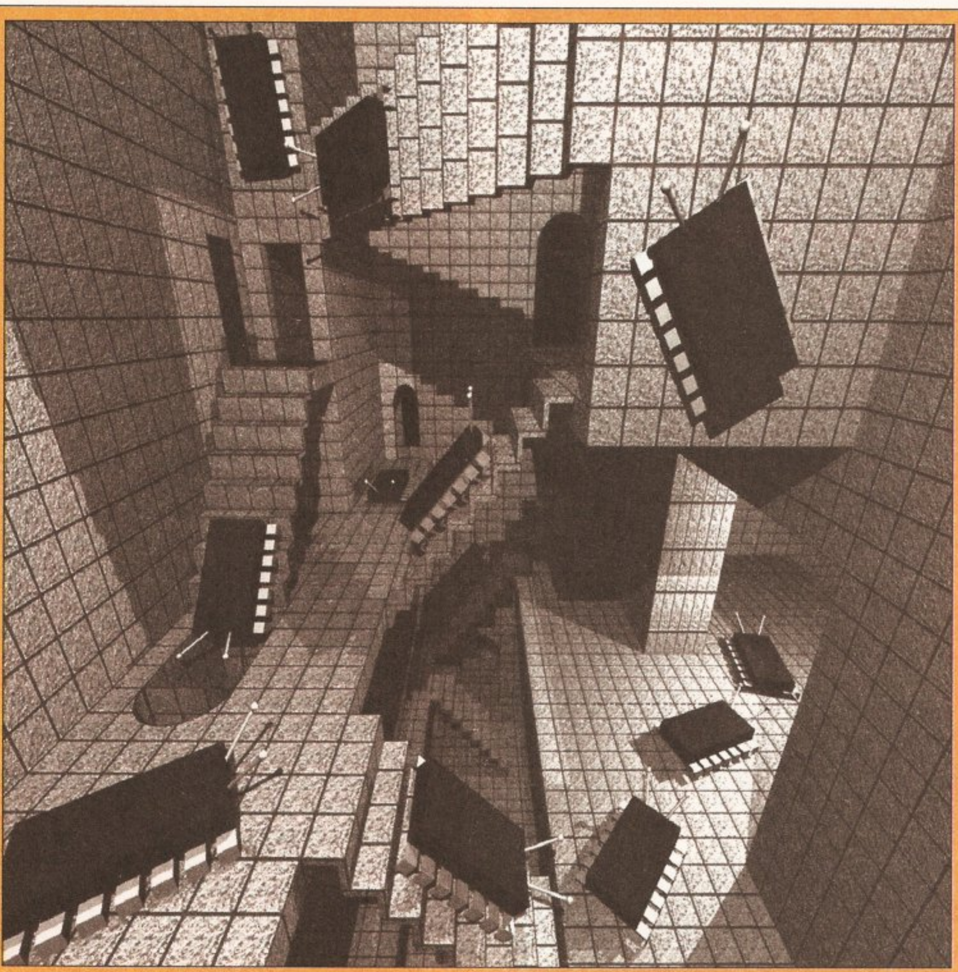
adorning the front covers of recent issues.

Al's Yuri Large is well versed in computers – he used to sell PC and Macintosh systems, but finally found a permanent resting place with the Amiga nearly five years ago. Today, Yuri and his three partners run a company which turned over in excess of £350,000 last year and already looks like beating that this year.

Says Yuri, "We started things on a small scale and built it from there. The first machine was an Amiga 2000 with *Pro Video Plus*, then we moved on through *Video Scape*, *Sculpt* and most recently *Real 3D*. We've stayed with the trusty A2000s though – we have seven at the moment and most of those are accelerated with Progressive Peripherals 040 cards.

"There wasn't any point moving to the A4000 – although their board is only 3MHz faster, the A2000s run the same jobs 20% quicker and time is money here. Besides, we don't really need the HAM-8 because we're already running a true 24-bit card and HAM-8 is not as good – close, but not quite good enough. Even so, a lot of the video work we do is still just 16-colour high-res."

So why did Al choose Amigas rather than the more traditional professional machines such as the PC and Macintosh? "Macs are a lot cleaner – the user interface is nice – but the software is just too expensive. The top two packages for the Amiga cost less than £400, whereas the same thing for the PC or Mac costs over £2,000 – it's all a question of economics. More importantly though, the Amiga doesn't suffer the compatibility problems of the PC. When you plug a card in an Amiga it tends to work in spite of anything else you may already have. Do the same thing on a PC and out comes the screwdriver."



Henri Bujko's cover for Amiga Shopper 24 – high-tech Amiga graphics meet MC Escher.

Today, Alternative Image do corporate video work, producing everything from training videos to colour slides for companies as diverse as Crookes Healthcare and Walkers Crisps. For slide production, Yuri and Co found a particularly interesting solution to a common problem. "We produce the slides on *Pro Page*, then send them to a bureau for printing. However, when you mention the Amiga, bureaus either give you a blank look or fret about the possibilities. So now we give them a PostScript file on a PC disk and ask them to print it – what the eyes don't see..."

As a closing comment, Yuri has this advice for new businesses: "spend as little as possible." Although he admits this won't guarantee success, it will go a long way to keep things on the move in the early days.

Alternative Image ☎ 0533 440041

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AMIGA COMPUTER MODEL TYPE	SOFTWARE INCLUDED	HARWOODS PRICE FOR STD UNIT	HARD DRIVE Options [see page 2]				
			40Mb.	60Mb.	80Mb.	120Mb.	210Mb.
A600 Stand Alone Pack [No Software]	NONE	£194.95	£329.95 SAVE £15	£379.95 SAVE £15	£399.95 SAVE £25	£469.95 SAVE £15	£569.95 SAVE £15
A600 Wild, Weird and Wicked Pack	MICROPROSE GRAND PRIX, PUSHOVER, SILLY PUTTY DELUXE PAINTIII	£224.95	£354.95 SAVE £20	£404.95 SAVE £20	£424.95 SAVE £30	£494.95 SAVE £20	£594.95 SAVE £20
A600 Epic Pack with 20Mb. Hard Disk Drive	EPIC, MYTH, ROME, TRIVIAL PURSUIT, MULTI LANGUAGE DICTIONARY, AMIGA TEXT WP, DELUXE PAINT III	£294.95	£344.95 SAVE £100	£419.95 SAVE £75	£439.95 SAVE £85	£509.95 SAVE £75	£629.95 SAVE £55
A1200 Stand Alone Pack [No Software]	NONE	£379.95	£514.95 SAVE £15	£564.95 SAVE £15	£594.95 SAVE £15	£654.95 SAVE £15	£754.95 SAVE £15
A1200 Comic Relief Pack with Sleepwalker	SLEEPWALKER RED NOSE COMIC RELIEF GAME	£384.95	£519.95 SAVE £15	£569.95 SAVE £15	£599.95 SAVE £15	£659.95 SAVE £15	£759.95 SAVE £15
A1200 PROPACK with 80Mb. Hard Drive (See details below)	SEE BELOW	£919.95 SEE BELOW	£869.95 SAVE £35	£889.95 SAVE £65	£919.95 SAVE £65	£989.95 SAVE £55	£1079.95 SAVE £65

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PCMCIA, 2Mb.	£114.95
PCMCIA, 4Mb.	£169.95

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Excellent Value... £34.95

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AMIGA A1200 COMPUTER FITTED WITH 80Mb.HARD DISK DRIVE and supplied with... CITIZEN 240C COLOUR PRINTER including all leads required and Citizen Print Manager 2 program PLUS... A1200 Dust Cover, 240C Dust Cover, Mouse Mat, Printer Paper and Labels AND the brilliant new Final Copy II Word Processing package.

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The NEW Microvitec will work with all Amigas and its specification is very impressive. The display is a 14" Colour with a maximum resolution of 1024 x 768 [interlaced], has a .28 dot pitch, and the built-in DMS [digital memory system] enables the Amiga and monitor to retain adjusted settings for each screen mode when changing between them. The new Microvitec is compatible with all Amigas, Atari ST/Falcons, IBM PC's, Apple Macs and Acorn Archimedes.
THIS MUST BE THE ONE FOR ALL SERIOUS AMIGA USERS! £439.95

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	LC100 Colour	£154.95
	LC200 Colour	£204.95
	LC24/200 Colour	£269.95
	XB24/200 Colour	£389.95
	SJ48 Mono Inkjet	£209.95
Canon Inkjets	BJ10sx Mono	£229.95
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Speed	5ppm	5ppm	5ppm
Memory	512K exp. to 4.5Mb.	1Mb. exp. to 7Mb.	2Mb. exp. to 8Mb.
Compatibility	HP Laserjet IIP (PCL 4)	HP L/J IIP (PCL 4), HP L/J III (PCL 5), HPGL2	As LS-5EX + TrueImage (Microsoft Postscript), Apple Laserwriter+
Fonts	14 Std + 15 PC	14 Std + 15 PC + 8 PCL5 (Agfa)	As LS-5EX + Truetype + 35 Postscript
Interfaces	Auto-parallel & Serial	Auto-parallel & Serial	Auto-parallel & Serial + AppleTalk
Resolution	300 x 300 dpi	300 x 300 & 600 x 300 dpi	300 x 300 & 600 x 300 dpi
Price	£629.95	£749.95	£999.95

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8Mb.	£629.95	£684.95

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RAM	80Mb.	120Mb.
1Mb.	£584.95	£644.95
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4Mb.	£749.95	£804.95
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RIBBONS

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CITIZEN 124	BLACK ONLY	£4.75	£22.95	N/A	N/A
CITIZEN SWIFT 9	BLACK/COLOUR	£4.75	£22.95	£16.45	£94.95
SWIFT 24/24E/224	BLACK/COLOUR	£4.75	£22.95	£16.45	£94.95
STAR LC10/20/100	BLACK/COLOUR	£4.45	£23.95	£5.95	£34.95
STAR LC200	BLACK/COLOUR	£5.95 ZX9	£32.95 ZX9	£12.45 ZX9CL	£64.95 ZX9CL
STAR LC24/200	BLACK/COLOUR	£6.95 Z24	£39.95 Z24	£12.95 X24CL	£69.95 X24CL
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	Music X full version 1.1	£24.95
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The inside story

This month we examine the way in which the Amiga's memory is organised and how the machine knows where to find or put things – the process of addressing.

In this month's "Amiga Exposed" we'll be taking a close look at the principles that lie behind the process of addressing. This doesn't mean that we'll be explaining what to call the Queen if she chooses to pop round for tea. For that matter, we won't even be exhorting you always to remember your postcode. What it does mean is that we'll be taking a close look at the way in which the Amiga's powerhouse, the Motorola 68000 processor, deals with the task of finding out where to get data from internally or where it needs to be put.

However, before we leap into a detailed explanation of the Amiga's various addressing modes – there are actually 11 of these – let's consider first how the Amiga's memory is organised and what the process of addressing actually is.

THANKS FOR THE MEMORY

Whenever you want to seek out where some data is stored within the computer's memory or want to store something new, you need to know where it is to be found or where it should be put. Without wishing to sound patronising to any grandmothers who are reading this by trying to teach them how to suck an egg, you'll find that the Amiga's memory consists of two distinct segments, ROM and RAM. The ROM (Read-Only Memory) is the computer's permanent memory, containing the bare bones of the operating system – you may have heard it referred to as the Kickstart chip – which is installed at the time of the Amiga's manufacture. Information that's stored in the ROM can't be altered – it can only be read. You may have heard of this type of memory described as "non-volatile". The RAM (Random Access Memory) on the other hand is "volatile" memory. This means that once the power has been switched off all of the information that was stored in the RAM is lost.

THE THEORETICAL POSTROOM

The most common analogy that's employed when describing how memory functions is to consider the workings behind a "theoretical postroom". In this "postroom" we have a wall that's covered in small "pigeonholes". These "pigeonholes" are used for holding the letters that come into the postroom. Our postroom has a restriction – we only allow the one letter to be stored in each of the pigeonholes. For the system to work, evidently each of the pigeonholes must have a unique name on it which is used to distinguish it from all of the other pigeonholes.

The way in which a computer's memory is organised follows a similar convention. Instead of "pigeonholes" however we have what are termed memory locations, and instead of letters we are storing information. Like the postroom, however, each of these memory locations has to have its own unique identifier. These identifiers are referred to as memory addresses.

The memory addresses are organised sequentially. The starting address is zero. The top address depends on the addressing scope of the particular processor – for the Amiga the largest address is 16Mb because the 68000 can only directly address up to 16Mb of memory. There is of course one other important restriction – and that's the amount of memory that is actually installed in the machine.

When the 68000 processor wants to access a memory location it has to know its unique address. As with all the other numbers that the computer handles, it uses binary. Just to be awkward though you'll often find memory locations referred to in text books by their hexadecimal address (the same value as the binary number but expressed in base 16 instead). You can see this if you look at the memory map that we've shown for the A500's RAM.

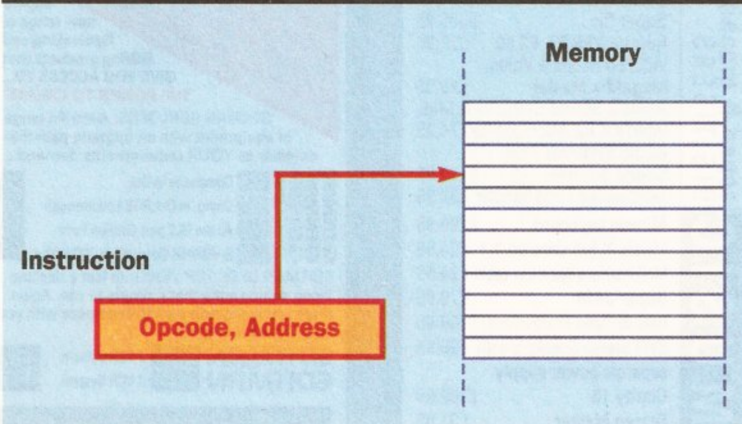
THE DIFFERENT 68000 ADDRESSING SCHEMES

As we said in the introduction, Motorola's 68000 processor boasts a collection of 11 different addressing modes. Don't worry though, to make things a little bit simpler these can be considered under five different functional categories. These are:

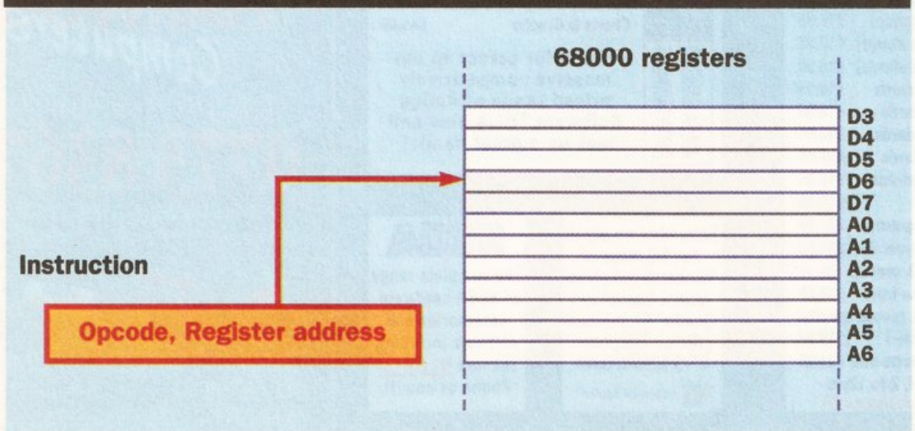
- register direct addressing,
- absolute data addressing,
- program counter relative addressing,
- register indirect addressing, and
- immediate data addressing.

All of these different addressing schemes share a common purpose. That purpose is to provide a "pointer" to the absolute address – that is, the precise memory location where the information that we want to access is stored. In many cases this will be the address of a RAM memory location, but it can also be the address of one of the 68000's internal registers – memory locations in the 68000 chip itself, which have the benefit that they can be accessed much more quickly. These are typically an address or data register or the program counter,

ABSOLUTE DATA ADDRESSING

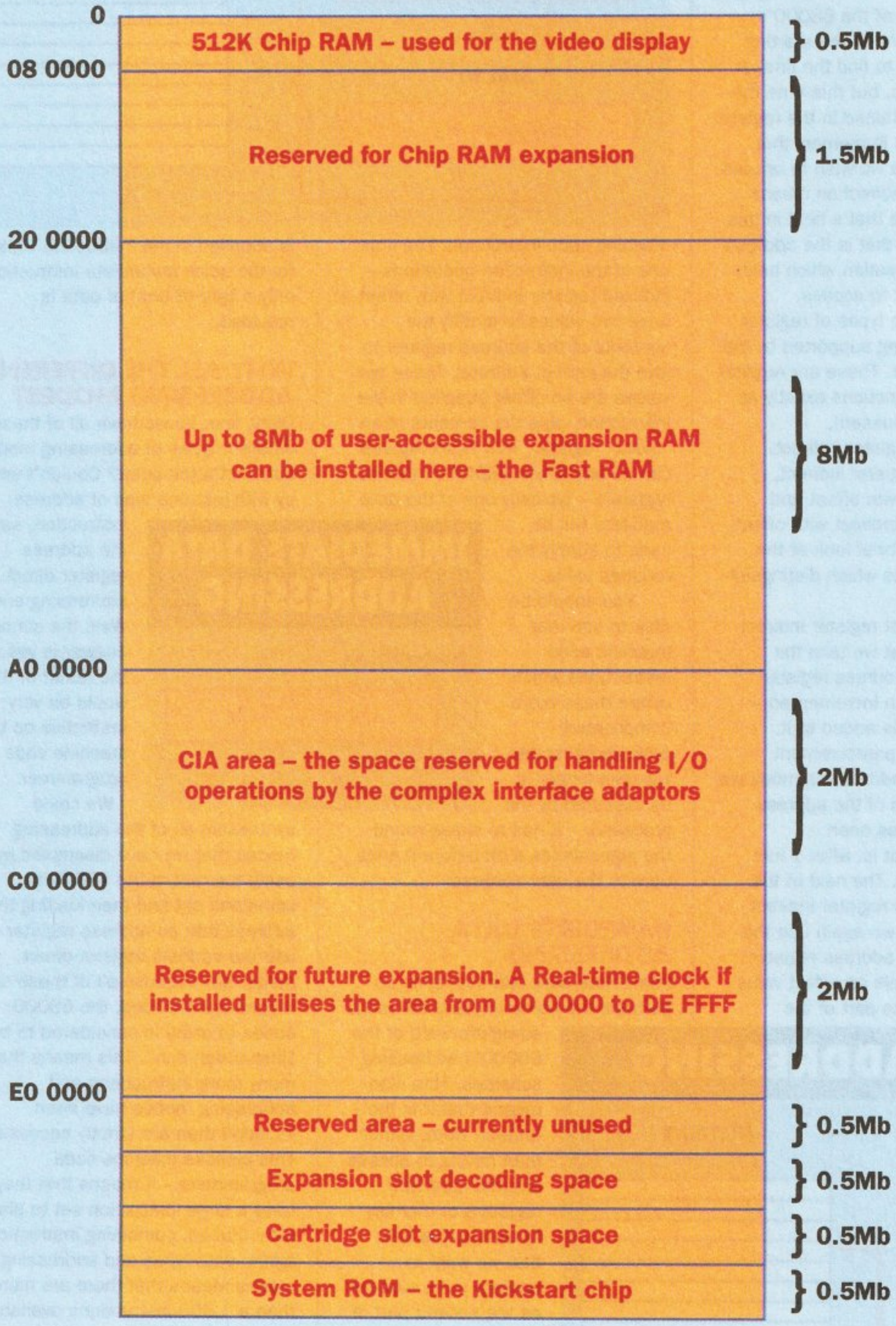


REGISTER DIRECT ADDRESSING



A500 MEMORY MAP

The diagram that we have shown of the A500's internal memory organisation is referred to as a "memory map". The numbers down the left hand side of the map are the hexadecimal addresses of the memory at each "boundary" point. (By convention we use hexadecimal – base 16 – as the notation for memory addresses.) The maximum possible extent of accessible memory locations is 16Mb. This limit is imposed by the addressing range of the 68000 processor – it can only generate addresses in the range 0 to 16,777,215. By no means is all of this memory available for storing programs and data – much of the addressing range of the 68000 has to be reserved for dealing with the Amiga's internal operations.



The bottom 512K is reserved for Chip memory – Chip RAM as it is generally called. Access to this Chip RAM area is slower than for other sections of the memory. That's because the Chip RAM is accessed not only by the 68000 processor but also by the Amiga's specialised chips – Paula, Agnus and Denise. This "slugs" the speed at which the 68000 runs when accessing these addresses. If the custom chips are reading or writing at these addresses then they will "cycle steal" from the 68000 – this means that the 68000 is "locked out" while the custom chips are using the Chip RAM.

Address space is provided for up to 8Mb of Fast RAM. It's called Fast RAM because only the 68000 has access to this area and so is never "locked out". Obviously you can only use this area of memory if your A500 has had some expansion memory fitted – if you try to use a memory address for which the memory doesn't exist, then you'll find that you simply end up with a Guru error.

Moving down to the next partition in the memory map you'll find that the two megabytes of addressing range between A0 0000 and BE FFFF are reserved for use by the odd and even CIA chips for handling the input/output operations such as the serial and parallel ports as well as the keyboard.

The next 2Mb of address space were reserved for future system expansions. If you have a real-time clock fitted then this utilises some of this space.

The final 2Mb in the 68000's addressing range are divided into four half-megabyte partitions. The first is a reserved area that is unused. The next partition is dedicated to the side expansion slot and the half Mb below this is utilised as cartridge slot expansion space. The "bottom" half Mb of the 68000's addressing range is reserved to allow access to the System ROM. This is the Kickstart part of the Amiga's operating system. When the machine is powered up it's the instructions that are contained in the ROM that enable the Amiga to boot AmigaDOS from disk. If you haven't put a disk in the drive then it's data from here that makes the screen flash an animated disk icon at you as a prompt.

which keeps track of what instructions are to be executed next.

REGISTER DIRECT ADDRESSING

In its register direct addressing mode the information that we want to operate on is already stored in one of the 68000's internal registers. The 68000 processor offers support for two different register direct addressing modes. These are address register direct addressing and data register direct addressing. With address register direct addressing we operate on the data in one of the 68000's eight address registers. Similarly with the data register direct addressing mode we use the value stored in one of the eight data registers. In each case the identifier for the appropriate register is included as part of the machine code instruction that is being processed.

These register direct addressing modes are a "quick" method for accessing information – no "intermediate" steps have to be performed to calculate the absolute address, unlike some of the other addressing schemes that we shall now consider.

ABSOLUTE DATA ADDRESSING

Again with absolute data addressing there are no intermediate steps to be performed before arriving at the final address. With this method the address of the memory location is supplied in the instruction.

The 68000 permits two types of absolute data addressing. These are called absolute short addressing and absolute long addressing. The terms short and long refer to the length of the address which is supplied in the instruction. Short addresses are a word long – that's two bytes, or if you prefer 16 bits. A long address on the other hand occupies two words –

that's four bytes or 32 bits. Logically enough, short addressing is faster.

PROGRAM COUNTER RELATIVE ADDRESSING

Another one of the 68000 chip's internal hardware registers is the program counter. The processor uses the program counter to keep track of which program instruction is the next one to be executed – it contains an address that points to the position in memory at which this next instruction is stored.

We can also make use of the address contained in this register for performing two different types of relative addressing instructions. Before explaining these two addressing modes, we'll just examine what the concept of relative addressing itself is all about.

The absolute address that is required is obtained by adding two values. These numbers are called the base address and the offset. The base address is the value that is stored in the program counter – the address of the next instruction that's due to be executed – while the offset is the value that is supplied in the machine code instruction.

The two program counter addressing modes that are supported by the 68000 are program counter relative with offset and program counter relative with indexed offset. The first of these two modes functions exactly in the manner that is described in the previous paragraph. The latter however is just a tad more complicated. Instead of modifying the contents of the address register with one value it is modified by two – the offset supplied in the instruction and the contents of another register, which is referred to as an index register. This index register can be any one of the 68000's registers but most typically it will be one of the data registers. Adding these two values to the base address contained in the address register gives our absolute address.

REGISTER INDIRECT ADDRESSING

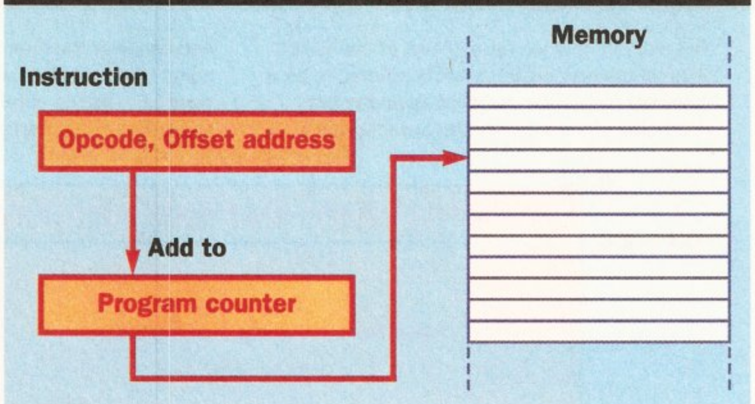
With register indirect addressing we again utilise one of the 68000's hardware registers as the starting point on our trail to find the final or absolute address, but this time the value that is contained in the register isn't the address in memory that contains the data we wish to access. The process of indirection means that it's the value that's held in this memory location that is the address of the memory location which holds the data we want to access.

There are five types of register indirect addressing supported by the 68000 processor. These are register indirect (which functions exactly as we have just discussed), postincrement register indirect, predecrement register indirect, register indirect with offset and indexed register indirect with offset. Let's just take a brief look at the salient differences which distinguish the five modes.

Postincrement register indirect simply means that we take the contents of the address register before it has been incremented – that is, before 1 is added to it. Similarly, for the predecrement register indirect addressing mode we take the contents of the address register after it has been decremented (that is, after 1 has been subtracted). The next of the indirect modes is register indirect with offset. Here we again use the value held in the address register, but also add to this an offset value that is supplied as part of the machine code instruction. The final one of the indirection operations – indexed register indirect with offset – uses two values to modify the contents of the address register to give the correct address. These two values are an offset supplied in the instruction, plus the contents of an "index" register. This index register can be any of the 68000's internal registers – typically one of the data registers will be used to supply the required value.

You should be able to see that machine code instructions which utilise these more complicated addressing modes will take longer to be executed by the processor – it has to chase round the pigeonholes a bit before it ends up with the right address.

PC RELATIVE ADDRESSING

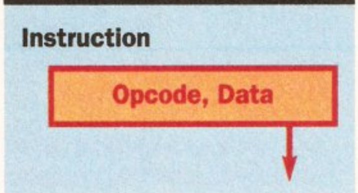


IMMEDIATE DATA ADDRESSING

Immediate data addressing is, as perhaps the name implies, the most straightforward of the 68000's addressing schemes. This also means that it is the fastest. Here, rather than having to access internal hardware registers or memory locations, the data that we want to operate on is supplied as the second part of the instruction.

Two types of immediate data addressing are supported. The first is called immediate data addressing and the second quick immediate addressing. The difference between the two is simple enough. In the immediate form a word of data (16 bits) is supplied in the instruction while for the quick immediate instruction only a byte (8 bits) of data is provided.

IMMEDIATE DATA ADDRESSING



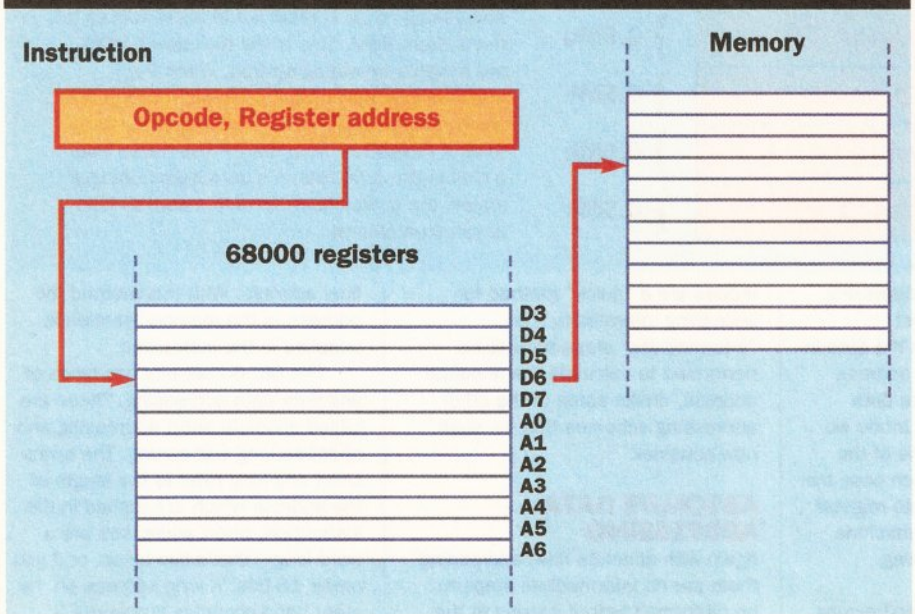
WHY ALL THE DIFFERENT ADDRESSING MODES?

Okay, fine, so we have all of these different types of addressing modes, but what's the point? Couldn't we get by with just one type of address instruction, say the address register direct addressing one? Well, the simple answer is yes. But the result of this would be very restrictive on the machine code programmer.

We could synthesise all of the addressing modes that we have discussed by using the rest of the 68000's command set and then loading that address into an address register and use the address register direct mode. But because all of these other modes are provided, the 68000 series of chips is considered to be "instruction rich". This means that many more instructions and addressing modes have been included than are strictly necessary. This pleases machine code programmers – it means that they have a large instruction set to play with. Indeed, combining instruction types, data types and addressing modes means that there are more than a 1,000 instructions available within the 68000's command set – which offers a very great degree of flexibility. Take the program counter relative with offset mode – it permits a programmer to write position-independent code – and then only have to supply the offset value.

You may have heard the 68000's instruction set referred to as "orthogonal". Really all that means is what we have just explained – the different instructions, data types and addressing modes can all be combined. AS

REGISTER INDIRECT ADDRESSING



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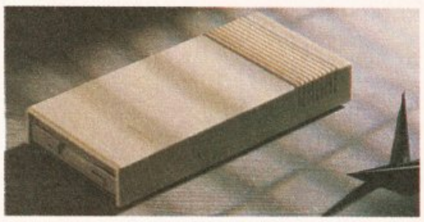
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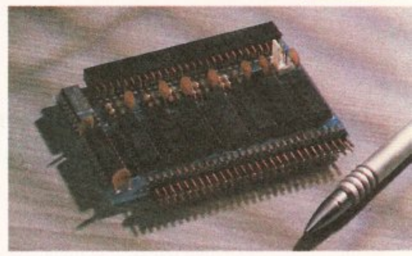
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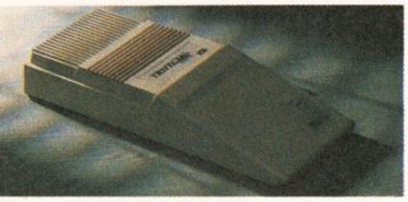
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Making movies

This month, Wilf Rees looks at how animations and video can easily be linked to produce a quality presentation cassette.



In this Videoware animation, a cassette is inserted into the VCR before a hand with a remote control switches the VCR on. You could use the space on the screen to put a video image of your own.

More and more, schools and colleges are using video to record information. Indeed, it's rapidly becoming the norm to present a demonstration or tutorial via television, rather than live. In my school, we use video with our Amigas for two different purposes – as an easily-retrieved bulk storage medium for animations, and as a means of giving video film a professional look, by adding titles and special effects.

The Amiga has proven to be first choice, among both amateurs and professionals, as the ideal machine for working with video, and the reasons for this are both the tremendous facilities the Amiga offers and the very reasonable cost of dedicated hardware to support it.

GETTING STARTED

If you have never tried linking your Amiga to video, it's probably time you did. Perhaps when you purchased your Amiga you bought a monitor at the same time, so the modulator never got taken out of the box. Well, this little device is extremely useful, if employed to take your animations from your Amiga over to video. What the modulator does is convert RGB linear signals into either RF or Composite colour video, which can then be plugged directly into either the aerial socket of a VCR or the video-In, respectively. Of the two options, going out of the Composite colour video-out socket on the modulator is by far the better choice – the quality of colour and image are far superior. It may be that you have a SCART socket on your VCR, in which case, both sound and Composite colour video can be connected directly. You will need to investigate the manual of your VCR to ascertain the correct pin connections, or failing that, contact the manufacturer. SCART was introduced as a convention, but as happens with all conventions, some manufacturers go their own way.

Using your VCR in this manner has two benefits: first, big animations can be directly loaded down on to tape, and second, the limitations of your Amiga's memory can be overcome, by "daisy-chaining" animations, to create a much longer piece of work. Recently, the domestic video market has seen the introduction of machines with specific attributes particularly suitable for this kind of task. One such feature is the Flying Erase Head. This device enables the user to record to specific frames. If used in conjunction with a "jog-shuttle", which is a device for moving through the video frame by frame, the tape can be edited and amended without those horrible snowy glitches between the joins. Use the last frame of one animation as the first frame of a new animation, and you can easily create an animation as long as a videotape will play.

Using the VCR to store and display animations is a really useful application, but by far the most popular use of your Amiga and a VCR is the linking together of video and computer graphics images. To do this you need a device called a genlock. There are numerous makes of genlock on the market, from about £100 upwards. Taking the application even further, a device called a chromakey allows all sorts of trendy special effects to be added, just like those you see on pop videos and science fiction films.

THE WAY AHEAD

Let's begin by doing some planning. When you make a video of any sort, the first stage is the development of a story-board. This is a sequence of drawings illustrating the key action points in your video. Collated as pictures and notes, a story-board enables you to think through all of the important points, ensuring that you can get every detail and every shot just right. When you are entirely satisfied, then you move on to the shooting programme. This is the point where the famous clapper-board appears. Originally its function was to check that the soundtrack was properly synchronised with the picture and the clap sound occurred exactly at the moment when the clapper hit the board, but in video it is used to make a record of each shot, identifying its significance and location. The shooting programme is probably the most important part of your whole activity, simply because

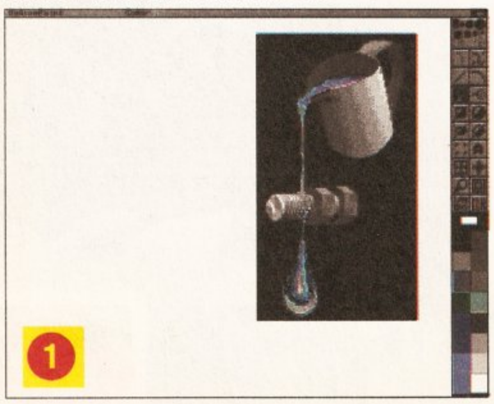
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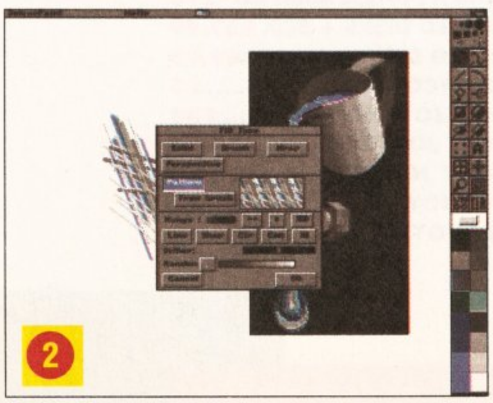
There are some exciting disks to support your video work from a firm in Cheshire that specialises in just that. *Videoware* offers literally thousands of animations, of all manner of subjects, to be imported directly into your work. Some of the examples are anim brushes, some are backgrounds adaptable into animations, and some are for special effects.

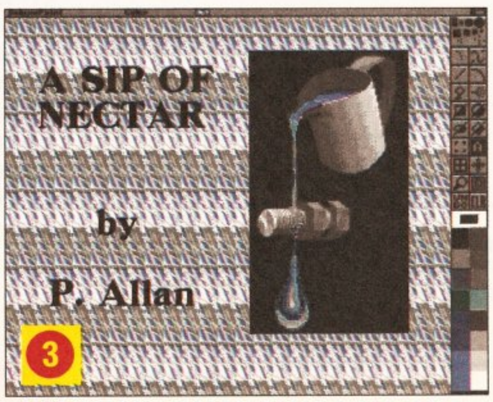
Volume 1 contains animations appropriate to weddings, anniversaries, parties, holidays, festivals, and more. This collection requires a minimum of 1Mb of RAM to work, as well as *DPaint 3* upwards.

Volume 2 is a bigger collection, with much more complex animations, again covering a broad spectrum of subject matter. Some of the animations in this package will need additional memory (2Mb or more) to make them go. There are also two animfont sets in this package, all in all totalling 12 disks.

I was particularly impressed by the video effects package, which contains all manner of wipes, fades, dissolves and screen break-ups, all ready to be utilised immediately within any of your efforts. What's more, along with each pack purchased comes a tiny six-page booklet, brimming with really useful information on how to improve not just the quality of the end products but, equally important, the way in which you use both your hardware and software. It's a genuinely helpful package!







getting the order of shooting right can save hours of work, as well as allow specific effects to happen.

What is not always apparent when you watch a finished film is that the sequence which you see doesn't necessarily bear any relation to the actual order of shooting. Often, external influences determine the order. If you are making a film featuring an early morning railway station scene, for example, then you look at your time schedule and fit that scene in to correspond with an appropriate early train at your local station. And if your film starts and finishes at the same railway station, then only a wally would think of two separate trips.

Similarly, reversing the playback can produce an effect that would be impossible to achieve in reality. A good example is the advert for Carling Black Label featuring the glittering underwater sequence dancers and the knights. At the end of the advert, a hand rises from the water holding a pint of the said drink. Has it ever crossed your mind that if you start with a pint of lager underwater and slowly lift it out of the water, most of it would have floated away and you'd actually be drinking pond water? (Mind you, I could name a few pubs...) The simple answer is to slowly lower the glass into water, filming it until it is completely submerged, so when the film is played backwards, the desired effect is achieved.

A TOUCH OF CLASS

Making your videos look really professional needs the kind of attention to detail we see all the time on television. It really is a sensible idea to actually sit down and watch a programme, not from the point of view of the content, but to analyse the events on the screen. Look at how the titling is done, watch the way in which camera shots are used and cleverly switched. Observe the use of lighting, and how sound is used to emphasise specific events in the action.

WORDS INTO ACTIONS

Take a look at the example on these pages. It combines several



These disks provide an excellent opportunity for anyone looking at developing animation skills further, by incorporating them into your own work or developing the samples into something further.

processes to demonstrate what I mean. The animation of the humming bird flying towards the drip of liquid running over the bolt was created with *DPaint*. The finished animation was then transferred to video. Once the video was completed, the equipment was set up according to the pictorial representation (see 6), employing two VCRs, an Amiga and a genlock. I appreciate that one might normally use ordinary video for the main presentation, but in this case I have used a computer animation to demonstrate the principle of saving animations to tape. If you look at picture 6, you can see how I started with the animation playing from VCR 1. This was fed into a genlock, which in turn was plugged into the Amiga. *DPaint 3* or *4* was loaded, and subsequently displayed on the monitor. The second lead out of the genlock went to VCR 2. A TV was plugged into VCR 2, and this monitored the original image from VCR 1, with the *DPaint* screen "locked" over the top of the first animation. Whatever I chose to produce on *DPaint* and then ran was automatically recorded over the top of the original animation.

GETTING YOUR ACT TOGETHER

This sequence of clips shows the stages I went through to produce the simple completed video.

1 I began by creating a black window on the screen. Background is white. The position of the window is determined by a "dry run" of the original animation to determine the most appropriate location for viewing.

2 I created a few simple lines of varying thickness in different colours. It is important not to make the colours too powerful, or any text added later will not be easily read. A section of this was grabbed as a brush, and then I went to the right mouse button on the **FILL** gadget and selected **FROM BRUSH.** This provided a complete fill of the screen, apart from my viewing window, based on a recurring, neutral pattern. You can if you wish add boxing lines to make the window look more professional.

3 Using the animation facility and text, I created the text I wished to use for the finished work. The text was then made to scroll upwards from the bottom, over possibly 40 frames. The more frames, the smoother the text flows. When I arrived at the final location of the text, I stamped several frames in the same position, to make the text appear to have stopped. I filled the text with one of the pattern colours, and saved a couple more frames, repeated the exercise a couple more times with a different pattern colour, and then ran the animation – the text appears to dissolve. Playing the animation once, starting with a screen with background pattern, without text, will cause the animation to return to the original text-free shot. The finished sequence appears to start, text moves up from the bottom, stays put for a period of time, dissolves, and then everything returns to the beginning.

4 5 I now began to make a second animation. This time our attention is turned to the black viewing window. I made the window slowly grow over a number of frames, and the original video animation from VCR 1 was exposed. The sequence of clips from picture 6 show this process happening.

6 Once the completed animations were sorted, I then recorded on to VCR 2, capturing the two processes together: the animation of the bird from VCR 1, locked to the animation from *DPaint* of my viewing overlay.

Although a simple demonstration, it does give you the principles to begin thinking of ways in which you can make the overall presentation look much better. The secret lies in experimenting and trying different ideas out. There are no limits to the possibilities, only your own imagination. AS

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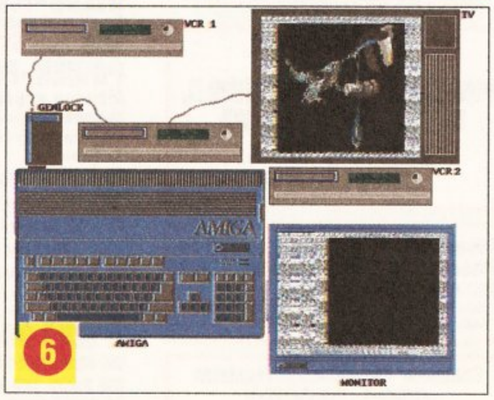
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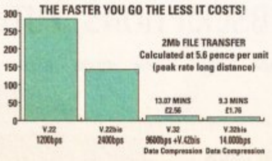
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AS/MAG/08

CONTENTS AT-A-GLANCE

OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS

AMIGA ANSWERS



USING THE ICONS TO FIND WHAT A QUESTION'S ABOUT



Questions that raise basic problems or deal with elementary issues feature this icon.



This icon's for general Amiga-related queries or questions that don't fall under other headings.



This is the icon you'll find next to queries related to the whole area of desktop publishing.



Questions about monitors, including television display problems, will feature this icon.



This icon's for queries relating to general hardware, excluding kit covered by other headings.



This icon indicates a question asking for buying advice in any area, hardware or software.



If a query concerns printers, printer drivers and hardcopy problems, this is the icon you'll find.



Questions about coding (no matter which language) will have this icon next to them.



This one's for queries about using your Amiga with video hardware such as genlocks or digitisers.



This icon is for questions about MIDI, sampling, synthesizers and music software.

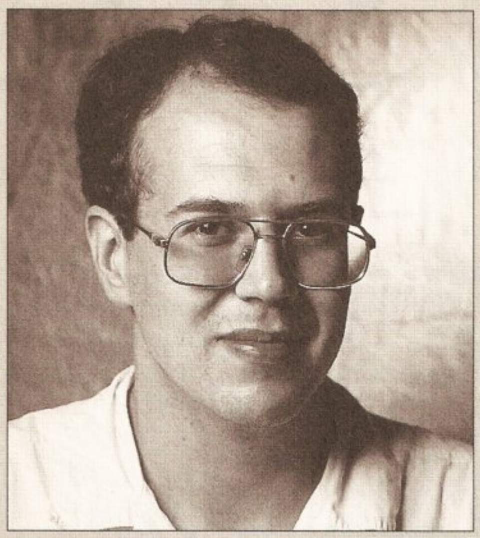


Queries about specific software packages or programs have this icon next to them.



If your question relates to comms, including modem problems, this is the icon we'll use.

NO PROBLEM!



Gus Chandler – ever smiling, ever friendly, ever ready to help. Well, two out of three ain't bad.

Welcome to another fact-packed 11 pages of Amiga Answers. This is the section of the magazine that's dedicated to solving *your* computing problems. But more than this, while we always seek to provide definitive replies to individual readers' queries, we'll also set the answers in a wider context. This means that you should find our advice helpful even if you've got only a passing interest in a particular subject.

To help us keep the Answers section the most informative and vibrant problem-solving section of any Amiga magazine, we call on a panel of Amiga aces – all experts in their fields – to sort out all those technical teasers that have had you baffled. So, if you've got a recalcitrant monitor or want the lowdown on genlocks, we'll put **Gary Whiteley** on the case. If your disk drive makes a painful sort of grinding noise or you're not sure why typing the AmigaDOS command `DELETE DF0:#? ALL` can be fatal, then **Mark Smiddy** will set you straight.

Jason Holborn is our house-trained AMOS guru – he's the man to explain that a copper list isn't a drunken constable. If you're having trouble getting your modem to speak to the outside world, or want the lowdown on baud rates, then **Dave Winder's** words of wisdom will soon have you sorted. Perplexed by a programming problem? Then our code clinicians, **Toby Simpson** and **Paul Overaa,** will rapidly debug it. Having headaches with hardware? Then we'll get **Jolyon Ralph** or **Wilf Rees** to handle it – Jolyon's also the main man when it comes to CDTV.

Right, that's our panel – now it's up to you to tax their grey matter. Just keep those problems rolling in. Please don't send us an SAE with your letter though – we simply receive too much mail to provide an individual reply service.

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you.

Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Sorry, but we cannot reply personally to any questions – even if you include an SAE.

Name: ____________________

Address: ____________________

____

____

Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐ **A1200** ☐

A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine:__________

Kickstart version (displayed at the "insert Workbench" prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.x** ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! __________

Total memory fitted (see AVAIL in Shell for Workbench 1.3) __________

Chip memory available (see AVAIL in Shell) __________

Agnus chip (if known) __________

Extra drive #1 (3.5in/5.25in) as DF__: Manufacturer __________

Extra drive #2 (3.5in/5.25in) as DF__: Manufacturer __________

Hard disk: ____Mb as DH__: Manufacturer __________

Extra RAM fitted – type, size in Mb and manufacturer __________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 28

PRINTS CHARMING

I have an A500 with a Canon BJ-10ex bubblejet printer which I use to print out illustrations from *DPaint* and documents from *PageStream.* Although the print speed from *DPaint* is quite acceptable, printing from *PageStream* takes an absolute age. Is there anyway to speed up printing?
John Mathews
Bristol

Printing from a desktop publishing program such as *PageStream* does take longer simply because the program doesn't just perform a graphic dump as *DPaint* does. Instead, a DTP program also has to create a very high resolution version of the page in its own memory (up to 360 dots per inch when printing to a BJ-10ex) to ensure maximum print quality. This obviously takes time – hence the wait to print out.

It is possible to speed up printouts from *PageStream* a bit by using the *CMD* utility on your Workbench disk. *CMD* is a very handy little program that traps the output to your printer and writes it to a disk file which can then be streamed out to the printer "en bloc" once *PageStream* has done its stuff. The files that *CMD* produces do tend to be rather large though – around 500K is the average. To use *CMD,* simply swap back to Workbench as soon as you'd like to print your page and then enter the CLI and type the following command, all one single line (and don't forget to replace **<filename>** with the filename that you'd like the printfile to be stored under!).

```
SYS:System/CMD Parallel ☛
<Filename>
```

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

You can then go back into *Page-Stream* and print your document. You'll notice that instead of streaming the printer information to the printer, the Amiga saves it off to disk. When *PageStream* has finished printing and the drive light is no longer lit, go back to the Shell and type the following command.

```
Copy <filename> PAR:
```

Speed isn't the only advantage offered by this approach. If you have a document that you feel you'll need to print out again in the future (a company logo, for example), you can permanently store it on disk and then print it out again simply by "copying" the printfile to the parallel port. Once the printfile is there, you'll find that the document will print faster than even *DPaint!* ***JH***

GET IT TOGETHER

My brother owns an A500 Plus (with printer) and I am considering buying the new A1200HD, possibly with the new Commodore 386sx bridgeboard (for the PCMCIA slot). Can you supply any information about this board – for instance, will it take advantage of the AGA chipset, allowing SVGA-type graphics modes?

Also, I would like to link these two machines together using a null-modem cable, creating a mini-network:
(a) Is this idea feasible?
(b) Where can I get the necessary software?
(c) Can both terminals use the printer, hard disk and emulator?
(d) What would the A500 Plus need upgraded to run Workbench, an application (word processor for example) and the necessary software?

If this type of software is not available, is writing a program to handle such tasks in C a possibility? (If so, are there any books to help me?)
Tim Massingham
Keswick
Cumbria

I'm afraid that the A1200HD is not available in this country yet, and according to Commodore is unlikely to be available for some time. Fortunately, it is an easy task to fit a hard disk in a non-HD A1200 – see the feature in *Amiga Shopper* 23 for details. (If you missed that issue, you can order it on page 116.) Alternatively, some major dealers are authorised to fit hard drives to A1200s for you – contact Indi (☎ 0543 419999) or Silica Systems (☎ 081 309 1111), for example, for details.

The 386 bridgeboard does not plug into the PCMCIA, and requires a full expansion slot of the type found in the A2000, A3000 or A4000 in order to work. Currently, there is no way of getting this device into the A1200, and even if you did you could not automatically use SVGA modes with your AGA chipset. You would need to buy a separate VGA card to do that.

The next bit of bad news is that there is no simple way of linking two Amigas together in a network using the serial port. The speed of data transfer using the port (about 3 to 10K a second) is not sufficient to make such a device feasible. Fortunately you can do just the thing you require with a public domain software package called *ParNet.* This links two Amigas together using the parallel port, and they can both share one hard disk. Contact your favourite PD library – there's a directory on page 112.

I would recommend adding at least another 512K to your 500 Plus if you are going to be doing this sort of thing.

As far as writing such a program yourself goes, if you're seriously interested in learning a language such as C, try following the C programmers series in *Amiga Shopper* (this issue, page 87). ***TS***

RIGHT HARD

I have upgraded to an A1200 and wish to install a hard drive. In PC magazines there are countless numbers of IDE drives for sale. Before I buy one of these drives can you answer some questions for me:
1. Does the Amiga use a 40-way connector rather than the 44-way of its PC counterpart?
2. Are the 40- and 44-way the only two different types of IDE connectors?
3. Does the Amiga use the 2.5-inch drive, and will it support 3.5-inch hard drives?
4. Will fitting a hard drive invalidate my warranty?
5. Does the Amiga power supply have a limit for the size of hard drive it can power?
6. Does Workbench have an in-built utility to install a hard drive, or will I have to buy a separate piece of software?
7. Can the Amiga access cache memory on-board a hard drive?
Lee Colman
South Shields
Tyne & Wear

The 2.5-inch IDE drives use a small, high-density 44-way data/power connector, which is as far as I know unique to 2.5-inch drives. 3.5-inch IDE drives use a standard 40-way IDC cable and a separate 4-way standard power connector. 2.5-inch drives use one combined cable. It is possible to buy an adaptor for the 40-way cable to enable 2.5-inch drives to be attached, but it is not possible to attach 3.5-inch drives to 2.5-inch connectors (as in the Amiga), because 2.5-inch drives use 5 volt power only and there is not the required 12 volt power line.

So the Amiga 600 and 1200 only support 2.5-inch IDE. Although it is technically possible to add an external 3.5-inch IDE drives, they will need their own external power supply. The Amiga 600 and 1200 both have enough power to power any 2.5-inch IDE drive, regardless of capacity.

Opening your machine to fit an internal hard drive *does* strictly invalidate your warranty, although in general as long as any faults that may occur were not a result of your hard disk your machine will almost certainly be repaired under the warranty. I once sent back an Amiga for warranty repair that not only had the warranty seal broken, but all the screws missing and the internal shielding bent. They fixed it without question. New Amigas are remarkably reliable, and it is far more likely for your hard drive to fail long before your Amiga does, but obviously hard disk faults will not be covered by your on-site warranty.

Workbench does not come with the required programs to install a hard drive in an Amiga 1200. You should either purchase a pre-initialised drive from an Amiga supplier, or follow the instructions for Amiga 600 hard disk installation given in *Amiga Shopper* 23, but you will require the Amiga 4000 Install disk rather than the Amiga 600HD disk. Also, when formatting your partitions, use Workbench and choose the **DIRECTORY CACHE** option for dramatically faster drive performance.

Cache memory on the hard drive is used purely by the drive to improve performance, and cannot be used by the Amiga directly. ***JR***

WHERE'S PRO DRAW GONE?

Could you tell me where I can buy *Professional Draw 3?* I have tried most of the companies listed in your magazine, and none of them supplies it any more.
Christopher J Hart
Cheltenham
Glos

I drew a blank too. I phoned about 25 dealers and got pretty much the same reply from each of them: "Haven't got it. Can't get it." Combine that with the fact that *Pro Draw 3* doesn't work properly on the Amiga 1200, and we can perhaps guess that Gold Disk has withdrawn it from sale while it gets fixed?

If you want to chase them directly, Gold Disk's address is: Gold Disk Inc, PO Box 789, Streetsville, Mississauga, Ontario, Canada L5M 2C2. ☎ 0101 416 602 4000. ***JW***

MATCHING MUSIC-X

Can anyone help me locate *Music-X* (1.1) protocols for a Yamaha RX17 drum machine and a Kawai K1 synthesizer?

By the way, in answer to J

Dabell in *Amiga Shopper* 22, *Music-X* can convert *Music-X* files to MIDI and SMUS and vice versa, and there is a suitable program on the *Music-X* utilities disk.
Gavin Dodds
Sunderland
Tyne & Wear

I'm afraid I don't know of any collections of *Music-X* protocols but if there's anyone out there who does know of a suitable source I'll gladly pass the details on through these pages. And thanks for the file conversion info. ***PAO***

WHEN IS A DOS NOT A DOS?

1. I have a problem with copying disks. When I try to Diskcopy from the Shell using this command:

```
DISKCOPY DF0 to DF0
```

the Shell gives me this error message:

```
CANNOT OPEN DOS DEVICE.
```

Is this because the Workbench disk has not got this device on it, or could there be another problem on the Workbench disk?
2. When I try to print pictures from *DPaint 3* on my Citizen 120D+ printer, running on an EpsonQ printer driver, the only thing that gets printed out is a page of scribble. Do I have to use a different driver, or am I just missing something simple?
3. After rushing out to get *Amiga Shopper* 21 to get my hands on the cover disk, I got it home only to discover that I could not get into it, despite following the instructions to the letter. I still cannot get the disk to work. I assume that all the disks are the same – that is, to see the files I have to use "Show all Files" from the Window menu. When I type in the command:

```
cd AS_Shareware_VolI
```

all I get is this message:

```
file not executable return code 20
```

Obviously there is a problem somewhere along the line, but where?
David Waller
Birmingham

1. This is a simple problem of syntax. Open a Shell and try it exactly like this:

```
Diskcopy from Df0: to Df0:
```

An alternative is:

```
Diskcopy Df0: Df0:
```

It may be that you got your info from the *Enhancer* manual which comes with the A500. There are some mistakes in the syntax, and only trial and error will solve the mysteries.
2. EpsonQ is a 24-pin printer driver, and consequently will only give you garbage with your 120D+. I suggest you get the *Citizen Print Manager* disk, which will solve your needs. Citizen sent dealers bucket-loads free – try sweet-talking your local dealer. If you fail to grovel sufficiently, then worry not, the disk is only about £15, and I think the difference in quality will justify the outlay. Otherwise, you could use the EPSONX[CBM_MPS_1250] printer driver supplied on your extras disk.
3. One problem with the command statement that you tried was the fact that you missed the colon ":" off the end of "AS_Shareware_VolI:". This is always necessary when addressing a disk. (It's a very easy mistake to make, and that was one of the reasons we changed the format of the later *Amiga Shopper* cover disks to make it easier for more inexperienced Amiga users to get at the programs.) However, the error you got was not the usual one for this sort of mistake. Check the C directory of your Workbench disk – I suspect some of the commands are at fault. ***WR***

THE UPGRADE PATH

I am getting tired of waiting for my Amiga to catch up with me when running processor-intensive programs, so I have decided to upgrade my 68000 CPU. My current setup is as follows: A500 Plus, 2Mb Chip RAM, GVP Impact Series II 120Mb drive with 2Mb RAM. I would like to ask a few questions that would help in my choice of upgrade. I am not bothered about opening up my machine.
1. Does the ADSpeed by ICD offer much of a speed increase, and is it good value for money?
2. Are GVP offering an upgrade to the A530, or will they be in the near future?
3. What is the advantage of having a 28MHz 68040 over a 30 or 40MHz 68030?
4. Will a faster processor cause some badly-programmed games to go ridiculously fast?
5. What board would you recommend?
6. Would I be better off upgrading to one of the new Amigas with the faster processors – that is, the A1200 or A3000?
Paul Tucker
Grimsby
Humberside

This is a tricky one to answer, because which board I would personally recommend rather depends on what you are planning on doing with the machine. If you are a heavy DTP user, or work with ray tracing, then a floating point unit is important, for example. I'll do my best to answer your questions, but I strongly recommend that you read the feature in *Amiga Shopper* 27 on accelerators – that should help you to decide on which would be best for you depending on your uses for the machine. (If you need to order that issue, turn to page 116.)
1. ADSpeed certainly offers a speed increase, and if money is tight it is worth looking into. I would recommend you saved for a much faster processor though.
2. No, but this would be your ideal upgrade path. If you could, it is worth selling your current hard disk and buying an A530. This is the easiest way of doing this, and you will get the advantage that everything is in one neat box.
3. The 68040 is a very fast chip indeed, and at 25MHz it should easily outrun a 40MHz 68030 in most jobs. It has an FPU (Floating Point Unit) built in.
4. See above!
5. Again, this entirely depends on your uses of your Amiga. If you do not particularly need 256 colours, then the A3000 represents excellent value for money currently. The 68020 in the A1200 is fast, but not blindingly fast. If you really want speed then you'll want an improvement over that.

I would strongly recommend that you think carefully about what you use your machine for before shelling out money on an accelerator. ***TS***

PAGESTREAM FOR SALE

I use *PageStream 2.2* to produce a weekly "For Sale/Wanted" type publication, with a circulation of around 2,000. The master is printed on my Citizen Swift 24e and then photocopied 2,000 times. I have three questions for you.
❶ Can you recommend a laser printer to do the above job instead of a photocopier? The maximum I can spend is £1,500. Or am I better sticking with the photocopier?
❷ Concerning the scaling of imported scans into *PageStream*. Why do they still appear to be stretched horizontally, even after they've been scaled to 80% of their height?
❸ Does scaling bitmaps to 20.83% (or 21%, which is the closest I can get with *PageStream*) really give the best output on a 360 by 360 dpi printer? When I do this, using a 50 lpi screen frequency, the output is no better.
Bill MacTear
Am Poileagan
Outer Hebrides

❶ Depends how much the photocopying is costing you. My local copyshop will do 2,000 A4 copies for £60 plus VAT – 3p per copy. By the time you've added up the cost of the toner used, the paper and the wear

continued on page 45

DIY DISASTERS

MAKING THE SWITCH

Help! My own fault, this one. I changed the half-Mb trapdoor to Chip RAM. I had a "bright" idea to put a switch in to be able to change trapdoor half-Mb from Chip to Fast and back. This did not work, so I changed back to Fast RAM. Now after 10 minutes' use from cold boot, or as soon as I begin any intensive graphics use, the screen corrupts and then blanks.

After warm boots, this happens quicker. I have rechecked all solder joints and changed back to 1Mb Chip RAM, but the results are the same.
Mark Adams
Bexley
Kent

You've blown your 8372A Agnus chip, I'm afraid. Replace this, make the changes to permanent 1Mb Chip RAM and forget about switching back to half-Mb Chip – there's so little software that now requires the trapdoor Fast RAM that it's not worth the bother, in my opinion. ***JR***

AN OUNCE OF PREVENTION

I have been thinking about modifying my Amiga 500 to have 1Mb Chip memory, but I am worried about incompatibility problems. Is it possible to add a switch that could change from 1Mb Chip memory to half-Mb Chip, half-Mb Fast RAM?
Colin Cassidy
Rothesay
Bute

It is possible, but as Mark Adams discovered, not only is it difficult, but you can damage your machine doing this. My advice is to upgrade to 1Mb Chip RAM and keep it that way. Over 90% of software is compatible with 1Mb Chip RAM – all new Amigas have 1Mb Chip RAM fitted. ***JR***

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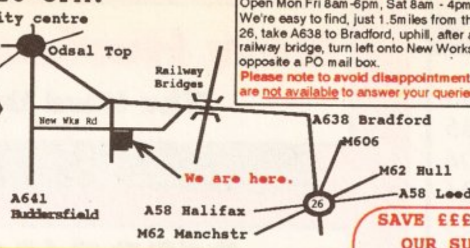
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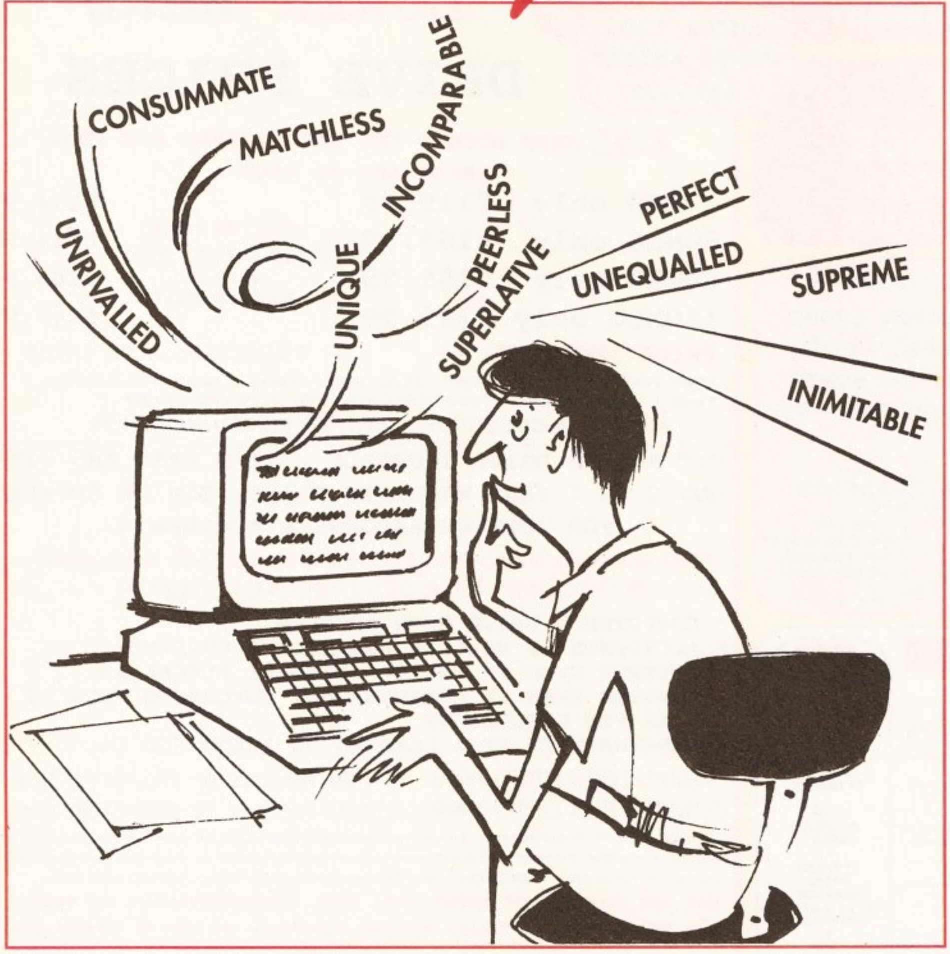
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and tear on the drum, the cost of printing 2,000 A4 pages on a laser printer could possibly be double that, about 6p per copy. And keep in mind that at the 8 pages per minute a £1,500-ish laser printer can print at, 2,000 pages will take more than four hours to print, or about nine hours on a cheaper 4ppm printer. That's 4–9 hours of electricity. It differs from printer to printer, but you can reckon on about 500w power consumption during continuous printing – the equivalent of leaving a single 60w light bulb switched on for about three days.

❷ It's just the way *PageStream* works. Amiga screen pixels are not square, and *PageStream* assumes you are using an NTSC monitor which has a screen resolution of about 65 by 55 dots per inch. PAL monitors have a screen resolution of about 65 by 70 dots per inch. I must emphasise that these are approximate figures; the actual resolution depends on the individual monitor and on how much you have twiddled the height and width knobs.

So, when importing scans if you you clear out the gadget that says **"IFF/ACBM ..."** and replace it with **"dpi=65,70"**, they should import at a better aspect ratio for a PAL screen. Or you could use **"dpi=390,420"** (six times 65,70) to get the image to import at approximately the same size as the original.

❸ For bitmapped black-and-white line art, yes it does, because this results in each dot in the bitmap being printed as a dot of one 360th of an inch on the printer. Well, actually the pins in impact dot-matrix printers are a lot bigger than one 360th of an inch, so the dots they print are bigger, but they manage to print 360 of them in a horizontal or vertical inch by overlapping dots.

But when you print coloured bitmaps or greyscales, the screen frequency you supply remains the same no matter what the scale. So 50 lpi results in 50 lines per inch being printed, no matter if the graphic is one inch or one hundred inches big – each inch will contain 50 "lines".

Screen frequency is not the same thing as output resolution, but it is fair to say that specifying a screen frequency of 50 lpi for a graphic results in an apparent output resolution of 50 dpi, no matter how big or small you scale the graphic. The "screen", in other words, overrides the effect of scaling down.

To get a higher resolution printout of a scaled-down greyscale scan you would need to increase the screen frequency figure to 90 lpi, which is the largest figure that is able to print 16 shades at 360 by 360 dpi. However, the image may print out a bit dark because of the overlapping dots – a problem known as "dot gain".

I don't know how happy you are with the quality of the example printouts you sent me, but I can honestly say that they are about as good as you are going to get from a 24-pin impact dot-matrix printer. ***JW***

WHICH HARD DRIVE?

BUYING

I am considering buying a budget hard drive for my Amiga 500. It will be used for games like *Links* by US Gold.Please could you advise me which is the best budget hard drive available on the market. There seem to be so many conflicting views on hard drives, I've become quite puzzled at the vast variety available.

M Keene
Surbiton
Surrey

There are plenty of inexpensive hard drives available for the Amiga 500 now. The best currently available is still the GVP Impact II, but it is fairly expensive. At the other end is the Zappo drive supplied by Calculus stores, but its performance is absolutely awful. My advice is to go for the Commodore A590. It may not have a lot of storage, but it is reliable, fast (they now use a much faster SCSI drive than previous A590s), and far more expandable than other drives in its price range. And with prices as low as £199 for this drive it's a real bargain. ***JR***

POST HASTE

GENERAL

After two years with a 1.3-based A500, I've finally upgraded to an A500 Plus. However, I have several questions that I'd like to ask.

1. Can you give me any information about some sort of PD PostScript interpreter that will allow me to print PostScript files on a standard dot matrix printer? I have a Seikosha SP-1900.

2. I'm about to invest in the new GVP A530 with a 120Mb hard disk. According to the advertisements, it comes with 1Mb of 32-bit RAM. What's so special about 32-bit RAM chips?

3. I'd like to buy an anti-glare filter for my monitor. Which would you recommend?

Pedro Mateus
Agualva-Cacem
Portugal

1. What you need is a program called *Post 1.7,* which can be found on Fred Fish disk number 669. Ask at your friendly local PD library or check the directory on page 112.

2. The A530 (and indeed any processor accelerator based on the 68020 or better) uses 32-bit RAM chips to enable its 32-bit processor to run at full speed. If you were to run a 32-bit processor such as the 68030 using 16-bit RAM chips like those inside your A500, the processor would be slowed down because the RAM chips would cause a bottleneck. For more on this, see last issue's feature on upgrading your Amiga.

3. There are primarily two types of anti-glare filter available – polarised filters and the much cheaper mesh filters. Don't be tempted by a mesh filter – although they do cut down the glare produced by your monitor or television, picture quality suffers. Polarised filters are a much better bet because they don't reduce picture quality. We have reviewed these in previous issues of *Amiga Shopper,* but ask your local dealer for what is available there – shipping to Portugal from the UK may not be worth it! ***JH***

MIND THAT EXPANSION

HARDWARE

Is it possible and safe to put a RAM expansion board inside the Amiga 500 Plus, via an extension cable from the side port, to rid myself of the clutter off the computer? Also, is the Mach II 16MHz 68000 with a socket for 68881 Floating Point Unit a good inexpensive accelerator option for the A500 Plus? Would adding a 2MHz CIA chip instead of the 1MHz one already present offer any speed advantage?

W Vogelsang
Hunters Quay
Argyll

The short answer is no. Its not wise to extend the expansion port yourself at all, because it would need to be properly buffered. Doing this sort of DIY hardware upgrade is strongly discouraged, because although it may appear to work afterwards, it is likely to be unreliable.

The 68000 16MHz upgrade will almost but not quite double the speed of your machine. In this day and age, this is not much of an upgrade. If you can afford it, buying a 68030 card would be a far better and more economical choice in the long term.

And in answer to your final question, replacing the CIA chips with faster parts would make no difference whatsoever, because the Amiga's motherboard will run them at 1MHz regardless. It's the same reason you can't just plug a 10MHz 68000 chip into your machine and expect it to run faster. Boards like the Mach II have to do some clever trickery to work. ***TS***

IF THE BOOT FITS

GENERAL

My Amiga no longer boots software properly. Disks boot, and then lock up. I have checked my disks for viruses using *Zero Virus 2.1* but the results were negative.

I use a TV rather than a monitor, which involves disconnecting the PSU and RF Out regularly. Could any of these be the problem, or should I simply buy a new A1200?

Alex Collins
Wells
Somerset

There could be many reasons why your machine no longer works correctly. It could be a virus that *Zero Virus* is unable to detect. I recommend trying *VirusChecker 6.20,* which can be found on last month's *Amiga Shopper* cover disk. (If you don't have that, turn to page 116 quickly.)

Most likely though is that your disk drive heads are simply dirty. You can fix this by buying a disk head cleaner, which should cost you around £5. If this doesn't fix the problem, then it is best to get your machine checked by professionals and repaired properly. Repeatedly plugging in and unplugging the PSU could weaken the connection, but this wouldn't be likely to produce the symptoms you're experiencing.

As far as the A1200 goes, it is an excellent machine, and if you are into the Amiga seriously, then it would be a great upgrade choice from an A500. ***TS***

WHAT A CAD!

BUYING

Can you recommend a decent Computer-Aided Design program that can handle the task of electrical engineering, circuit design etc?

Paulo Ferreira
Lisbon
Portugal

The best CAD program available for the Amiga is *X-CAD,* which is available from Digital Multimedia on 0702 206165. It's available in two forms – *X-CAD 3000* and *X-CAD 2000,* a cut-down budget version of *X-CAD 3000* that costs just £129. Digital Multimedia also market a library of electrical components in *X-CAD* format which will be ideal for your particular needs. ***JH***

SHALL I, SHAN'T I?

GENERAL

Thanks to its new price, I am considering going for an A3000. The machine will replace my A500 Plus set-up and will be used mainly for DTP (using *ProPage 3*). I know the

specifications of the machine, but I'd be most grateful if you could answer the following:
1. Will the built-in "display enhancer" enable me to get a full-screen interlaced display without the flicker? (At the moment the standard display on my AOC is full screen, unlike some multisyncs I've seen.)
2. What exactly will a 68030 25MHz machine do to improve the performance of *ProPage 3?* Will the screen updates (for, say, a page of 10pt text on 100% magnification) be almost instant? Does a faster processor improve hard disk access?
3. At the moment, printing a page of 10pt text on my BJ-10 at 360dpi takes around 18 minutes. Does having a faster processor improve printing speed? If so, about how long could I expect this to take using an Amiga 3000?
4. I understand a faster processor improves the screen update speed of games like *Stunt Car Racer* and *F1 Grand Prix.* Does this affect the actual speed of the game – that is, does your car go too fast to handle or does that aspect stay the same?
Jim Dunk
Sheffield
S.Yorks

If your monitor has a horizontal sizing knob then you can adjust the screen width to fill your monitor. If not, then you will have to live with the default setting. I prefer a border around the screen. It allows you to set up a full overscan work area (so you have a greater screen area) without the screen distortion found near the edges of the monitor. Running the Workbench 2.0 commodity *BorderBlank* turns all border areas black, making a very pleasant working environment.

If you've been using *ProPage 3* on an standard 68000, then the 25MHz 3000 will come as a bit of a surprise. Screen update and operation speed are anything from five to eight times faster. The hard disk controller on the Amiga 3000 is a 32-bit access SCSI bus, which is incredibly fast.

Yes, printing time from *ProPage* will be dramatically faster than on your Amiga 500 – at least twice as fast, and possibly up to seven or eight times current printing speed.

Of course, anything the Amiga 3000 can do, the Amiga 4000 can do even faster. I've become used to the speed of the Amiga 3000 over the last couple of years, and after playing with the Amiga 4000 I was left with the same sense of wonder as I was when I first used the Amiga 3000.

Most vector-based games run a lot faster on the Amiga 3000, but not too fast to handle. (Usually – a notable exception is *Populous:* play it on the Amiga 3000 and the little men run around at about 400mph!). However, the screen update is better and the game plays smoother. ***JR***

THE COMPLEAT PROGRAMMER

I have an Amiga 500 and have been coding with Devpac 3 for a month after programming in BASIC, Pascal and Z80 for many years. I have the following questions:
1. When will the ROM Kernel manuals be updated to AmigaDOS release 3?
2. What are the uses and advantages of a Digital Signal Processor (DSP)?
3. Is it worth learning the basics of C to increase understanding when programming the operating system?
4. What is the difference between a viewport, a rastport and a bitmap?
5. What do you get in Commodore's Developer toolkit apart from the

CODE CLINIC CODE CLINIC CODE CLINIC

TOBY SIMPSON DEBUGS ANOTHER READER'S PROGRAM

Author: **Ian Saville**
Program: **Sending data to the printer**
Language: **C**
Fault Summary: **Can't get information to be sent to the printer under C. The author has tried several programs and solutions, but nothing has worked.**

This may look like a tough problem, but it is actually unfeasibly simple to solve, I'm afraid – programmers always like to find the most complex solutions to simple problems! The author was trying to write programs to specifically access the printer on the Amiga to print out a calendar for any year from the year 1600 AD. He got the program to operate fine using **printf** statements to the console window, but when he tried to open the **PRT:** device and send information out using **fprintf**, it didn't work.

Well, you didn't actually need to do anything for the printer whatsoever – if you've got a straightforward program such as this which simply prints a table of data, then you can use DOS re-direction to send the output to the printer. If your compiled program is called **"calendar"**, then you could run it from the Shell like this:

```
calendar >prt:
```

The output of the program will now go to the printer rather than the console. You can use DOS redirection for all sorts of handy things. If you wanted, for example, to print out an entire directory of a hard disk partition to the printer, you could simply do this:

```
dir >prt: all
```

The author also mentions that his original version of the calendar program was written in BASIC, and BASIC had a really convenient **LPRINT** command which he could use to send information to the printer, but C didn't, and that he could not see the point of programming in C if you could not do this. You have to remember that BASIC is a very simple language designed for beginners, and is not suitable for development of real applications – it's simply not powerful, flexible or fast enough. **LPRINT** is all very well and good, but if you wrote a program packed with **LPRINT**s and then wanted to provide an option to work with the screen as well, you would either have to search and replace out all of your **LPRINT**s to **PRINT**s, or write conditional code and have both the **LPRINT** and **PRINT** commands. C allows you to avoid this entirely. In addition, with compiled programs, you can use DOS redirection as shown above to send the output anywhere at all – printer, serial port, separate file and so forth.

Note: the symbol ☛ in listings means do not type a return – the line is simply too long for our narrow columns

It's actually very easy to send results to the printer in C, but there are a few small bugs in Ian's programs.

THE PROGRAMS

Ian wrote two programs in his attempts to get the printer working using C. The first used DOS files and tried to open a file called **"PRT:"** and then send the output to that. When that did not work, he tried to write a program using the printer.device to achieve the same thing. Unfortunately, neither program worked. There are actually some serious bugs in both routines, but they are particularly easy to get in C, so they are good things to tackle in Code Clinic.

The first program tries to access a file handle. The code to do this looked like this:

```
struct FileHandle *file_handle;

void main()
{
  file_handle = (struct ☛
FileHandle *) open( "prt:", ☛
MODE_OLDFILE );

  if (file_handle == NULL)
    {
    printf("Could not open the ☛
file!");
    exit();
    }

  fprintf (file_handle, "Hello ☛
to the printer");

  close(file_handle);
}
```

First thing to notice is that there are

JARGON BUSTING

ANSI: American National Standards Institute. The standards authority in the States which issued a standard for the C language. Most modern versions of C comply with the ANSI standard.

BASIC: Beginner's All-purpose Symbolic Instruction Code. Beginner's computer language designed before the micro-computer even existed, in the 1960s. This language has changed a lot since the early days, but is showing its age.

BCPL: The forerunner to C. BCPL is the language in which AmigaDOS was initially written in 1984. It's been the bane of the Amiga's life since then, because even though modern versions of AmigaDOS are written in C they still need to remain compatible with older DOS versions.

PRINT/LPRINT: PRINT is a BASIC command to show text on the screen. **LPRINT** is a different version of **PRINT** that sends the output to the printer. It's a non-standard command that first appeared on machines like the Sinclair ZX81 and got inherited by other BASICs. Better implementations of BASIC don't have **LPRINT** but have more powerful ways of talking to devices. BBC BASIC on the BBC-B computers was one of the better versions of BASIC.

Enforcer?
6. Is it worth buying the Advanced Systems Programmer's guide if I have the System Programmer's guide? They seem to contain similar information.
7. Is 2.5 seconds fast for a number sort of 500 items?
Paul Jackson
Leeds
W Yorks.

1. Good question. The update should happen soon, although most of the general information is available in the current release of ROM Kernel books, with the exception of data on the AGA chips.
2. A DSP is for the rapid processing of digital data. One of the common uses is for audio purposes, because it allows the creation of stunning audio effects very easily. A DSP will be available for the A1200 and A4000 shortly.
3. Yes, it's worth understanding C, without a shadow of a doubt. In fact, if you're going to be programming operating-system-based programs, then it's probably best to learn C properly. It's a whole load easier, trust me!
4. A view is what you see on the screen, a rastport contains information about a display area to enable the drawing and other graphic routines to work, and a bitmap is the area of memory that actually holds screen data.
5. The Developer's Toolkit has heaps of exceptionally useful debugging utilities. If you want further information, contact Commodore on ☎ 0628 770088 and ask to speak to developer support.
6. No, it's not really worth it. In my opinion the System Programmer's Guide is useful for stacking my monitor on. It contains programming that breaks the rules from cover to cover, and you will have to unlearn most of what you learn from it to do any serious programming on the Amiga.
7. Depends on which processor you have really! ***TS***

VERY GRAND ATTEMPT



How do you connect a VGA monitor (designed for PCs) to an A1200? Is there much of a difference between this and a good SCART TV?
W H Mikan
London SW18

You don't. Well, you can. If you get an adaptor, then you can plug one in. You will get a stunning difference in quality, but there is a catch: you will be forced to use double-scanned Amiga modes. This means you won't be able to play computer games on your VGA monitor, and may have problems with some applications that don't have modes that the "mode promotion" function of Workbench 3 can promote. If you want to buy a proper monitor for the Amiga, you'd be well advised to get a multisync monitor, such as the Commodore A1960. ***TS***

RAM BATTERING



I bought a RAM expansion for my Amiga 500 Plus some time ago and had to return it because of the problem below, but the replacement was exactly the same! Is this a problem with the RAM expansion or is my Amiga not compatible with this type of expansion?

When I had fitted the expansion into the slot in the trapdoor and switched on, Workbench showed the extra memory in the title bar, so I thought everything would be okay. When I booted up *Deluxe Paint 3* to create some animations – this is why I needed the extra Chip RAM – the Amiga still crashed at the same

CODE CLINIC CODE CLINIC CODE CLINIC

no comments in this program! I'll let you off, though, because it's such a little one. Your problem here is that on the Amiga there are actually *two* ways of opening and processing files. One is to use the **dos.library** functions directly, and the other is to use ANSI C functions, such as **fopen.** You seem to have confused the two and come up with a sort of mix between them. The "**open**" function in the guise you've used it does not actually exist at all. In ANSI C, **open** opens a level 1 file and takes three parameters, and returns an integer file handle. It's almost as if you wanted the AmigaDOS **Open** function (note the capital letter – function names are case-specific and it's vital that you get it right). You've used AmigaDOS parameters, such as **MODE_OLDFILE**, which are *not* compatible with ANSI commands. The AmigaDOS function returns a BCPL pointer (BPTR) to a file handle, not a normal pointer to a file handle.

If you open an AmigaDOS file, you can't use **fprintf** with it, because **fprintf** is an ANSI function and expects an ANSI file handle.

One final comment on the code: you have not got any newlines after your strings in the **fprintf** or **printf,** so no newlines are shown. In BASIC, if you use the command **PRINT**, unless you specify otherwise using the semicolon ";" , the next **PRINT**ed text will go on a separate line. In C if you want to go to the next line, you *must* specify with the **\n** sequence. For example:

```
printf("Hello\n\n\nHi\n");
```

This is much more versatile than BASIC because it allows you to print several formatted lines using one command, and put data items in the string at any point.

With regard to the file problem, you have to decide which form of file access you are going to use, and stick to it throughout your program. Personally I use AmigaDOS file accesses, but a lot of people like to keep their programs portable and use the ANSI standard. If you already understand the ANSI commands it makes sense to use those, because you can use **fprintf** and other ANSI file commands. If, on the other hand, you write programs simply for the Amiga and for no other format, there's advantages to be gained from using the **dos library** direct. This month's program will access the printer using these ANSI functions.

The other program attempts to use the printer device, like this:

```
struct IODRPReq PRReq;
struct PrinterData *PD;
struct PrinterExtendedData *PED;

main()
{
  /* Open the printer device */
  if (OpenDevice ☛
("printer.driver", ☛
0, &PRReq, 0) == NULL) {
    PD = (struct PrinterData *)☛
PReq. io_Device;
  /* Write to the printer */
  (*PD->pd_PWrite) ("Hello to ☛
the world \n", 19);

  /* Close printer */
  CloseDevice(&PReq);
  }
}
```

Hmm. This program is very buggy. You've got very confused with this, which is hardly surprising because it's a very complex issue. Accessing the printer.device is total overkill in this case, and requires a reasonable level of experience in programming the Amiga in C or Assembly language. BASIC shields you from all of this stuff totally, and is no help I'm afraid. I'll point out some of the errors as a guide, but I really recommend that if you want to program the Amiga at device level, *buy the ROM Kernal Manuals*. Get the documentation and do it properly – it's really worth it in the end and will save you a whole bundle of heartache.

First, you should be opening the "printer.device", *not* the printer.driver, which does not exist. Secondly, you are not actually sending anything to the printer at all. You are not setting up the command, the data pointer, the length, or sending a command to the device using **SendIO** or **DoIO.** You also have no message port for the operating system to tell you that it's done anything. The RKMs contain excellent examples of usage of the printer.device, and other Amiga devices, and are seriously recommended. You may be able to get them from your local library if you are particularly lucky.

I really think that there are very very few occasions when you'd need to open the printer device. One of these few occasions is to dump graphics to the printer; another is if you're writing an all-purpose printing utility – and even then...

Anyway, on to this month's program, which prints data to the printer using ANSI C file operations. A final note to Ian: use DOS redirection and **printf** if you can – it's really easy and you can display your results on both the screen and printer using the same compiled program simply by specifying different redirections, or even have the output in your own window by redirecting it to, for example, **CON:0/0/640/200/My_Window.**

This program was compiled and tested using both SAS C 6.2 and the DICE C compiler that we are featuring in *Amiga Shopper's* C programming series (see page 87).

```
/* Code Clinic program to print
  "Hello World" to the printer using
  ANSI C file commands */

#include <stdio.h>

void main(void)
{
  FILE *print_fp;

/*Attempt to open a file to talk to the
printer*/
  if (!(print_fp = fopen("prt:", "w")))
    {
    printf("Can't access PRT:\n");
    exit(1);
    }

  /* Print a test string */
  fprintf(print_fp, "Hello World!\n");

  /* Close up after ourself */
  fclose(print_fp);
}
```

time as it did when there was no extra RAM fitted. I tried some other programs but they seemed to be the same.

I really need the extra RAM but am loathe to buy another expansion which may not work either.
Tony Warren
Kingsteignton
Devon

First, you do not mention exactly what type of expansion you are using. If you did not buy an Amiga 500 Plus specific expansion, this is the problem. Make sure you buy a card that is guaranteed 100% compatible with the A500 Plus. I use the Phoenix 1Mb RAM card with my 500 Plus and it works perfectly.

If you did buy a 500 Plus compatible card, then either your machine is faulty and does not accept extra memory properly, or there are bugs in *Deluxe Paint 3* that prevent it from working with 2Mb Chip RAM. I find that unlikely, considering that it was bundled with the A500 Plus. ***JR***

NOT SO SUPER HI-RES

My Amiga has an intermittent fault when using Super-Hi-Res Workbench screens. Sometimes horizontal glitches appear, especially in areas of high contrast such as black text on a white background. Changing the palette fixes this problem. Could this be because of contention between the processor and the AA chipset for Chip RAM? If so, will buying Fast RAM (when it becomes available) solve it? Or, horrors, do I have a defective machine? (My warranty is already invalid because I have installed a hard drive).
Dave Walker
Southsea
Hants.

This sounds like your display to me. The resolution of super-hi-res is very high indeed, and a lot of TVs and cheaper monitors will have difficulties with the highest 1,280 x 512 resolution, and on high contrasting areas you might see the sort of effect you described. If you are unsure, get a dealer to look at it and give you an opinion. I would personally recommend trying your computer on another monitor to see if the problem vanishes before panicking. ***TS***

WRITE OFF

When using programs such as *Protext v5.5* and *Deluxe Paint 4* and saving files to my external drive, I often get reports concerning disk error, sometimes a guru message telling me to use *DiskDoctor*, and the program packs up. When I start up again I get another message saying "Bad Disk".

This only happens after successfully saving a couple of files on that disk. If I use *D-Copy* to check the disk, it tells me that a certain track indicated has a checksum error. Any ideas of the cause?
C Baker
Clowne
Chesterfield

It sounds like either you have a faulty external disk drive or you are using unreliable disks. Try formatting a disk in the internal disk drive, check it with *D-Copy* in df0: and then in df1: If both drives give errors you are using bad media – buy better disks in future. Otherwise you have a faulty external drive and you should have it checked or replace it. ***JR***

TAKE THE PLUNGE

Considering that my warranty has now expired, I decided to open up my A500 and have a mooch around the PCB.

I have a fatter Agnus, so I was considering altering JP2 and JP7A to give me 1Mb of Chip RAM. Presumably this will give me no Fast RAM whatsoever – however, will this help or hinder sampling and animation?

Secondly, my machine originally came with the A501 trapdoor expansion unit (with clock). When in place this gives me 1Mb. On my PCB there are the words "512K/1Mb RAM" just above eight chip spaces. Of these only four are occupied, and the rest are free. Can I utilise these to gain extra memory? If so, and I used the chips from my A501 and then bought a trapdoor 1.5Mb expansion board, would I have 2.5 Mb in total?

Assuming this works, would I ever have any problems with a GVP hard drive and more memory externally?
Jeff Coppard
Bognor Regis
W. Sussex

Extra Chip RAM should help sampling and animation, although animation with *Deluxe Paint* can use Fast RAM to store frames.

You cannot just change the jumpers, I'm afraid, because the A501 is programmed to appear at a certain memory address.

What's more, the A501 chips are *not* compatible with the four spaces inside your A500. If you were to buy four CMOS 44256 chips and solder them in, remove your A501 and change the jumpers, then you would find yourself with 1Mb of Chip RAM. Adding a further 1.5Mb trapdoor expansion would then work, because that occupies a different area of memory from the Chip RAM. If you are unsure, check first with your dealer.

If you do get it working, then you will have no problems with a GVP drive or additional Fast RAM at a later date. ***TS***

1200 QUESTIONS

I have recently purchased a wonderful A1200, but I have a couple of questions.
1. I was going to buy my computer with a 60Mb hard drive installed, but at the last moment the shop manager told me that they could not fit the drive because Commodore had changed the IDE pin connections on recent A1200s and A600s. Apparently they were not keen on retailers selling HD versions of their machines at low prices. Do you know anything about this? It is rather annoying to be without a hard drive.
2. I am eager to add a couple of Mb of 32-bit RAM to my machine, but as yet I have seen none advertised. Do you know of anywhere that sells some for the CPU slot? If not, how long do you think it will be before some becomes available?
W H Mikan
London SW18

1. Your dealer is misleading you. I'm confused why he should say such a thing because Commodore UK are positively encouraging authorised dealers to fit hard drives into A1200s. The pin connections on the IDE drive connector have not changed at all. There was a rumour a while ago that Commodore US were crippling A600s, but this is certainly not the case any more if it ever was true, and never has been in this country.
2. There are actually some cards available now. One I've seen has a 25MHz 68882 maths co-processor and 2Mb of 32-bit RAM on it. Others will have appeared by the time you read this. Enquire from the bigger dealers advertising in *Amiga Shopper*, like Indi or Silica Systems. ***TS***

FEED ME NOW!

I have had an Amiga 500 1.3 for about two and a half years, and memory was a problem. So I bought the new Amiga 1200.

I can get *Deluxe Paint 2* and *3* to work, but I cannot get *Deluxe Paint 4* to run. It gets as far as the screen format window, then I get a window telling me to put the disk "fonts" in. I obliged and tried all the fonts I had, but with no luck.

Finally, can I put the 512K expansion with clock from my old A500 into the A1200?
H Coomer
Speke
Liverpool

Your Amiga is asking you to insert the original *Deluxe Paint* disks which you should have from your box, which contain the necessary fonts that *DPaint 4* requires in order to run.

No, you cannot put your A500's memory expansion into the A1200. For one thing, the expansion slots are different on the new machine. ***TS***

TIME, PLEASE?

My A500 has a Datel 512K four-chip trapdoor expansion with clock, and whatever I do to set the clock, I keep getting the message "Battery Backed up Clock not found", and the system does not keep the real time when the computer is switched off.

The battery is fully charged, and I have tried Setclock, reset, load and save. The clock works fine in a friend's A500. As far as I can tell the tracks on my motherboard are okay. A check with *SysInfo* does not recognise the clock.
Jonathan Crisp
Northhold
Middlesex

This is an easy one. Your computer's broken. Well, it's almost certainly got a problem somewhere. It's worth having a good visual inspection of the inside of your trapdoor slot to check that all pins are present and correct. If this does not reveal anything, I strongly recommend you take your Amiga to a dealer to be looked at and possibly repaired.

If you know someone who also has a battery-backed-up clock for the Amiga, but a different one, try and borrow it and see if that works with your machine. If it doesn't, your problem is certainly in your own computer. ***TS***

HOMELESS COMMANDS

I can't make some AmigaDOS commands resident ("Dir", for example). What am I doing wrong?
Paulo Ferreira
Lisbon
Portugal

For any AmigaDOS command to be made resident, it must have its "pure" bit set using the AmigaDOS **Protect** command. For example, to

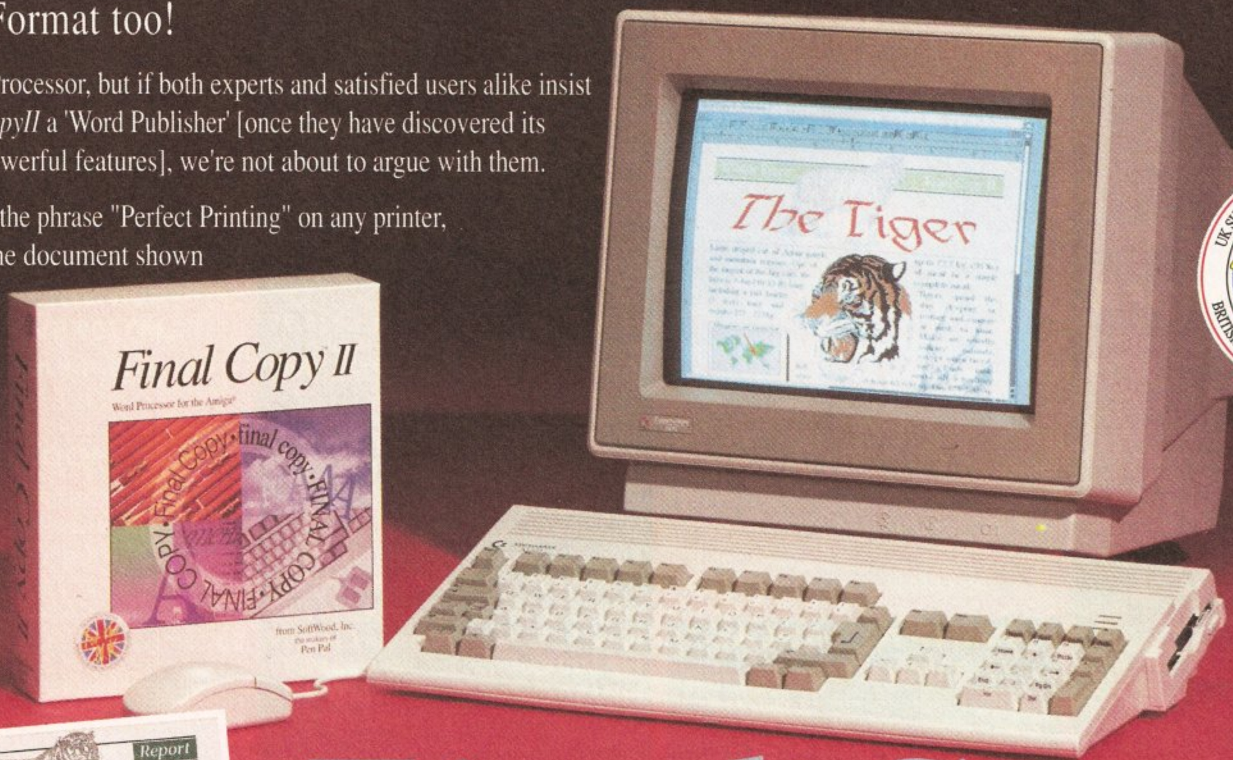
continued on page 53

Who says Final Copy II is the Best Word Publishing Program?

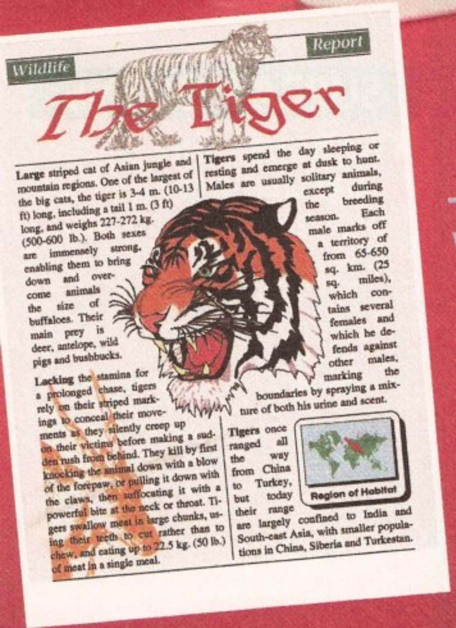
ot *just* thousands of satisfied Amiga owners,
ut Amiga Format too!

e call it a Word Processor, but if both experts and satisfied users alike insist calling *Final CopyII* a 'Word Publisher' [once they have discovered its ique blend of powerful features], we're not about to argue with them.

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Wildlife Report

The Tiger

Large striped cat of Asian jungle and mountain regions. One of the largest of the big cats, the tiger is 3-4 m. (10-13 ft) long, including a tail 1 m. (3 ft) long, and weighs 227-272 kg. (500-600 lb.). Both sexes are immensely strong, enabling them to bring down and overcome animals the size of buffaloes. Their main prey is deer, antelope, wild pigs and bushbucks.

Lacking the stamina for a prolonged chase, tigers rely on their striped markings to conceal their movements as they silently creep up on their victims before making a sudden rush from behind. They kill by first knocking the animal down with a blow of the forepaw, or pulling it down with the claws, then suffocating it with a powerful bite at the neck or throat. Tigers swallow meat in large chunks, using their teeth to cut rather than to chew, and eating up to 22.5 kg. (50 lb.) of meat in a single meal.

Tigers spend the day sleeping or resting and emerge at dusk to hunt. Males are usually solitary animals, except during the breeding season. Each male marks off a territory of from 65-650 sq. km. (25 sq. miles), which contains several females and which he defends against other males, marking the boundaries by spraying a mixture of both his urine and scent.

Tigers once ranged all the way from China to Turkey, but today their range are largely confined to India and South-east Asia, with smaller populations in China, Siberia and Turkestan.

Region of Habitat

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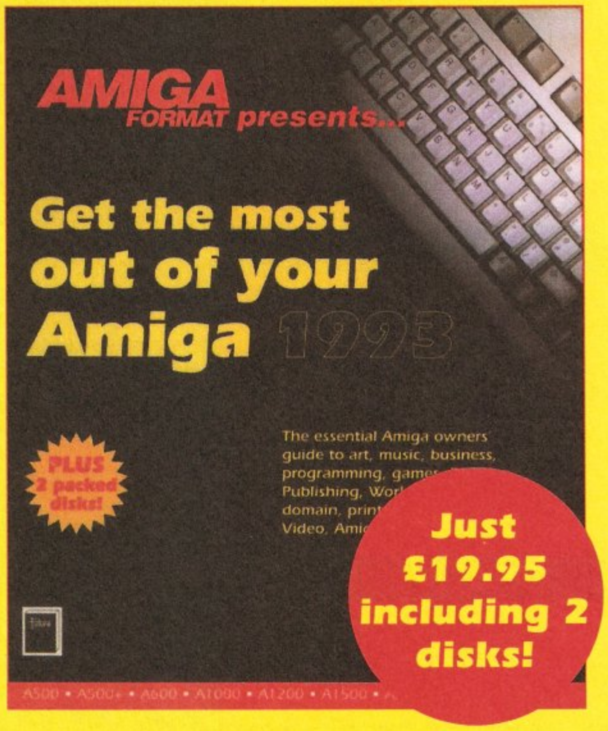
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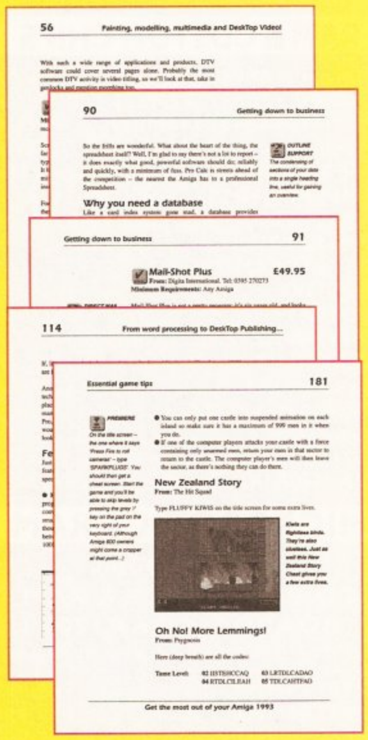
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(...Cont. on p2194)





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set the pure bit of the **Dir** command, you would type this:

Protect c:DIR +p

Once this is done, you can then make the command resident. ***JH***

BLOWN IT

After having the board revision for 1Mb Chip RAM performed (as explained in a previous *Amiga Shopper*) my trapdoor expansion no longer works. The battery-backed clock still works, but the memory doesn't register. Also, using *TextPlus*, *DPaint* or *IntroCAD*, or any Workbench-loaded software (and some games software) creates corruption on screen. Finally, *PPMore* when scrolling some text shifts halfway across the screen. Have I got to replace my Agnus chip?
Paul Connell
Newport
Gwent

I think you have blown part of your Fatter Agnus chip. Either this or your trapdoor expansion is not fast enough to work as Chip RAM. Try a friend's trapdoor expansion in your machine and see if it cures the problem. Otherwise you will need a new 8372A Agnus chip fitted – and make sure you earth yourself before fitting it. Static damage can cause exactly these sorts of problems to the Agnus chip. ***JR***

EVEN MORE, PLEASE

I have a GVP Impact hard disk controller and a 1.5Mb RAM expansion connected to the Gary chip in my Amiga 500. I would like to add another one or two Mb of RAM. Can I fit some SIMMs [Single In-Line Memory Modules] in the hard drive or do I have to remove the existing extra RAM I already have? If I have to remove my existing extra RAM, what can I do about a clock?
Peter Milton
Sittingbourne
Kent

You can add 2Mb, 4Mb or even 8Mb of RAM to your GVP hard disk without having to take out your Gary RAM board. ***JR***

THE OFFICIAL LINE

I have recently upgraded from an A500 to the A1200, and I am upgrading *Devpac 2* to the latest version in a few weeks. Where and when will I be able to get the Systems Programmer's Guide for the A1200, assuming I am right in thinking that it is written for assembly language programmers? (I don't like C.)
John Fortune
Kirkcaldy
Fife

I am afraid that there will not be a version of the Systems Programmer's Guide especially for the A1200. But I would not recommend this book anyway if you are trying to learn good, official assembly language programming. Commodore are not releasing the hardware information for the A1200, to stop people from writing bad programs (which is why some of your games may not work on your new machine).

If you are serious about learning to program assembly language on the Amiga, get *Mastering Amiga Assembly Language*, published by Bruce Smith Books. Ask about it at your local computer shop or specialist book store. ***TS***

HARDLY DRIVING

I have just bought a hard disk for my new A1200. It is a Conner 84Mb. I have partitioned the disk into two 40Mb partitions using *HDToolBox* from my old Workbench 2.04 system. The program recognised my disk as a Conner drive of the right size, but decided that it was a SCSI device. Will this cause me problems, or do IDE and SCSI devices appear the same to Workbench programs?

My partitions have been identified as CDH0: and CDH1:, and not as dh0: and dh1: as I would have expected. I have assigned dh0: to CDH0: to get around this and allow software which insists on dh0: to run. Are hard disks identified as CDHx: under Workbench 3.0? Or is this a problem with using an older version of *HDToolBox?*

I have installed *TransWrite* on my hard disk, but whenever I run it from there the machine crashes. If I run it from floppy or from RAM: it runs fine. I have a script that copies it from the hard disk to RAM and runs it from there. This works fine, but why?
Dave Walker
Southsea
Hants.

Your guess is right, Workbench sees IDE and SCSI as the same. Commodore made everything simpler by making the **scsi.device** handlers understand IDE drives. This has ensured that more software runs correctly.

As to the CDH0: business, we've moved into the 20th century here. You can call it anything you like, DH0:, HARDDISK0:, ZINGPING: or whatever you wish. In *HDToolBox*, there is a small string gadget centre bottom, which contains the device name in it. You can click here and change the name to dh0: if you wish. I personally find that it is more sensible to give it a meaningful name, like "Programs:", or "Work:", or perhaps "Comms:" for example.

Your problems with *TransWrite* could be due to two things. One, the program is somehow not hard disk compatible, or two, there are some incompatibility problems with Conner drives. The problem is that the IDE interface in your A1200 is blindingly quick, much faster than a portable PC, which is where Conner drives nearly always find their way. The drive simply cannot handle that amount of information moving around, and this sort of behaviour happens on large files and programs. Try using *HDToolBox* to lower the **MaxTransfer** rate to 0x1fe00 and see if that solves your problems. ***TS***

CHARGE BY THE MINUTE

I am considering upgrading my A500 to Workbench 2. I have absolutely no knowledge of electronics, so I would have it upgraded by a specialist firm anyway. However, for reference when I'm haggling over prices, could you please answer the following:

1. What board modifications, new custom chips, ROM, etc would I need to upgrade to Workbench 2? Obviously 1Mb of Chip RAM would be nice.

2. Would it be worth investing in a ROM sharer? Given my phobia over electronics I would prefer a keyboard-selectable version. What types are available? Might it not be better for me to wait and see whether Commodore are to bring out a sub-£1,000 Amiga to sit between the A600 and the A1500/2000 ranges? Given that the A2200 has been dropped, and given Commodore's track record, they are likely to launch such a machine just before Christmas...
Mark Simpson
Kingstanding
Birmingham

You don't need any modifications (apart from switching the ROM chips) to use Workbench 2.0, although you are correct in assuming that 1Mb of Chip memory is very nice indeed. This requires one small solder change and a track to be cut, about five minutes' work for any skilled electronic engineer. You can change the Denise chip to the Super Denise, which allows new video modes, but unless you want to get a multisync monitor it may not be any use to you.

I personally don't use any ROM switchers. I find very little software that doesn't work under Kickstart 2.04. If you do get a ROM switcher then the toggle-switch variety are more reliable (and cheaper) than the keyboard-controlled variety. And you were right, Commodore launched the Amiga 1200 at £399, aimed squarely at the original Amiga 500 market, and yes, you should buy one. They're brill. ***JR***

AND HE SHALL HAVE MUSIC...

I have an Amiga A500, and I am interested in getting a better machine. I am looking at the Amiga A1200 and the Amiga CDTV (with keyboard and trackerball/joystick expansion).

Are all my peripherals compatible with the CDTV and Amiga A1200? When will the AGA chipset be released with the CDTV, and would that mean that it would have Workbench 3 and remain at the same price?

Will a CD-ROM be available for the A1200, and if so, how much will it cost? Will a hard drive/accelerator be available for the CDTV, and will it be cheap in "Amiga terms"?

Would an Amiga A1200 with CD-ROM be far superior to the CDTV even if the latter did have AGA/WB3.0? The CDTV would be particularly inferior in comparison to the A1200's 68020 32-bit processor.

Finally, which machine would you recommend buying? I am currently swayed towards the CDTV because it is a computer and a CD player for under £500 and I don't currently own a CD player.
Damian Atkinson
Grimsargh
Preston

Basically any peripheral that plugs into the expansion port on the left hand side of the Amiga A500 is incompatible with the A1200 and CDTV, and the same applies to trapdoor and internal expansions such as extra Chip RAM boards and internal accelerators. Hardware expansions that plug into the ports at the back, such as printers, modems and additional floppy drives, will work fine on both the CDTV and Amiga A1200.

I don't know if Commodore will do a CDTV with AGA, but it would seem to be a logical progression, and if they did this they would be forced to release it with Workbench 3, which is what the AGA chipset requires to work.

Commodore have made no

statement about CD-ROM on the A1200, but seeing their commitment to the CD format, this would seem to be a logical thing to happen, sooner rather than later. Because no announcement has been made, I am afraid I can't help you with the price.

I would think that the A1200 with CD-ROM would be the same as a CDTV with AGA and Workbench 3, considering that AGA really requires a 68020 at least to work, so they would be forced to release it with a 68020.

If the idea of the features and speed of the A1200 appeal, I would recommend you buy one. If you are not sure, then wait. You can add accelerators and hard drives to a CDTV, but there is no way of adding the AGA chipset. ***TS***

JUST JUGGLE THE LEADS...

GENERAL

I have an Amiga 500 Plus with 1.5Mb of Chip memory. I have recently purchased a CD-ROM (A570) drive. I also purchased a GVP hard drive about six months ago. I have found that I cannot have both plugged in at once using a dual connector – they seem incompatible. Is there any other way of having both connected? The CD-ROM manual mentions that the A570 has an expansion port for adding peripherals. Does this mean it allows me to attach the GVP hard drive to it, or the bare Quantum drive the GVP has, or neither?
Simon Richards
Bolton
Gtr. Manchester

Unfortunately, you can't link both the A570 and GVP hard drive to the Amiga 500 Plus, as you have discovered. A SCSI expansion for the A570 will be available soon – it is the same as the SCSI expansion for the CDTV, but with a slightly different case. The good news is that you will be able to use this to connect the Quantum drive to your A570. ***JR***

GARY EXPANSION

HARDWARE

In answer to Chris Busby's letter (headed "ROM Selection") in *Amiga Shopper* 20, I have a Virgo 2000 RAM board with connection to the Gary on my A500. I recently bought the WB2 upgrade and it is working fine with my setup – no memory problems. So he should be safe

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CDTV PROBLEMS



Commodore's CDTV: Amiga Shopper readers asked the questions, we found the answers.

KEEP DRIVIN'

HARDWARE

I have recently bought an Amiga CDTV with an external drive, and now I would like to know:
1. Is it possible to use a second drive with a throughport between the external drive and the CDTV?
2. Can I use a hard drive? If so, which one do you recommend for this machine?
A Pols
Den Haag
Holland

Yes, any floppy drive with a throughport can be connected as df0: on the CDTV, allowing the standard drive to work as df1:

Hard drives for CDTV are now becoming available, at around £350 for a 65Mb external drive. Contact your usual CDTV suppliers. ***JR***

A FEW QUESTIONS

GENERAL

Can you please answer a few questions regarding my CDTV unit?
1. What Kickstart version do I have? (I bought it in mid-'91.)
2. Will there be chipset upgrades for CDTV, especially since AGA and ECS are floating about?
3. I've heard rumours of CDTV2. Will I have to sell my CDTV and get the new one?
4. What is AVM and will it be necessary?
5. I own *Devpac 3* (which is supplied in 1.3 and 2.04 versions), and only the 1.3 versions work, yet I've read that the CDTV has a specially-produced Kickstart chip 3.1. What's wrong?

I managed to get a copy of *SysInfo* for my CDTV and there are some statistics I don't understand. Can you help?
(a) When I clicked on "boards" the program registered that the CDTV was fitted with a Zorro 2 board, product name A2091/A590, board address $e90000, size 64K and manufacturer (naturally) Commodore. I though the A590 was a hard drive. And what is Zorro 2? Does it come with a Tonto board?
(b) It says that although the CDTV CPU is a 68000 and registers at 7.18MHz, it runs at approximately 0.04% faster than a standard A500. What's going on?
Christopher Draper
Walton
Liverpool

You have Kickstart 1.3 in your CDTV, and CDTV ROMs version 1.0. Both are different and need to be upgraded together to get Kickstart 2.0 or higher. ECS Denise chips can be added to CDTV. I have a CDTV here with 2Mb Chip RAM (using a Mega-A-Chip board), 8373 Super Denise and Kickstart 2.04. It's great. If a CDTV2 with AGA comes out, it is very unlikely that you can upgrade current hardware to AGA specifications – the new chips require a totally different motherboard.

AVM stands for Advanced Video Mode. It allows higher quality images to be displayed from CDTV, of a similar quality in some ways to the AGA chipset in the new Amigas, but it uses smaller files, which means that more AVM pictures can fit a disc than AGA pictures – and more importantly, they load faster and can be used for quarter-screen video.The Zorro 2 board found in your CDTV is actually the hidden ROM for the optional SCSI hard disk interface. When you add this you can run SCSI hard drives plugged into the CDTV. This is available now (with 65Mb hard drive) for around £350.

And I wouldn't shout too loudly about your CDTV being 0.04% faster than normal – everyone will want one! Seriously, it just shows that *SysInfo* is quite accurate at calculating your machine's speed, but not spot on. ***JR***

WELL CONNECTED

HARDWARE

I am utterly confused about what configuration would be needed for me to be able to run the A570 CDTV drive on my Amiga 500 (it is upgraded to 2Mb).
P Naylor
Bramley
Yorkshire

The A570 CD-ROM will work on any Amiga 500 expanded to 1Mb of Chip RAM. It will work with either Kickstart 1.3 or 2.04. It should work fine connected to the throughport of your Supra 500RX expansion, although there are problems when connecting it to the throughport of hard disk drives – the Supra 500XP for example works, but will not autoboot. If you turn off the A570 it boots fine; otherwise you have to boot from a Workbench disk or from the *CDPD* disk bundled with the A570.

You can at a later date add a hard drive directly to the back of the A570, which is far easier than trying to mess around with throughports. ***JR***

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getting the WB2 chip.

Your advice to Chris was to get rid of his board and buy a good one. Many people, especially impoverished students like me, are trying to get a usable system together without much in the way of funds, so sometimes we have to opt for these ugly solutions such as the Gary connection, but it gets the job done.

One question though. After getting the WB2 kit I found that my Action Replay MkII Cartridge would no longer function. Does this mean that it is now useless? I can't see it keeping the door open. I suppose it would work with a ROM sharer, but I don't really want to go in that direction – what's the point buying a new operating system and keep switching back to the old?

If any readers are on JANET they should try the NIX conference at Lancaster University – hensa.micros. It's all formats, not just Amiga.
Glenn Halstead
Edinburgh
Scotland

My views on Gary expansions are based on experience! It may seem a cheap way to expand your machine (indeed it is), but there are so many problems caused by these boards when you try and expand later, that many people give in and have to replace them with "real" memory expansion boards.

People who don't want to expand their Amigas very much or people on a tight budget (and who isn't nowadays?) should consider them, but I have to point out the disadvantages.

The Action Replay Mark II is one of the least compatible pieces of hardware I've ever had the displeasure to use. Luckily the Action Replay III is much better (although still far from perfect – it doesn't like more than 1Mb of Chip and 2Mb of Fast, and dies on a 68020/030), and is available as an upgrade from Datel ☎ 0782 744324. ***JR***

DRIVING AMBITIONS

HARDWARE

I recently sold my three-year-old A500 and bought a second-hand Amiga 2000, and then a MicroBotics 8-up memory board with 2Mb fitted and a 40Mb hard drive with A2090 controller. Unfortunately there was no manual for the hard drive, just a disk titled "Amiga 2094 Reinstall disk, Toshiba MK134FA, Date 15-Dec-88". This setup worked out a lot cheaper than buying a GVP hard drive for my Amiga 500, which I had originally planned to do.

The hard drive was already set up and has an option for using 1.3 or 2.0 using a program called *Zkick v3.01.* The main problem with this is that it takes over one minute to boot up, and I much prefer using 2.0 and never use 1.3

What I would like to do is fit a 2.04 ROM into my A2000 and use the ROM switcher recently featured in *Amiga Shopper.* I would only use my hard drive for 2.04, and 1.3 would only be for games that will not work with 2.04. But I have some questions.
1. How do I tell if my 2000 is rev A or B? (It has a mono video plug by the audio plugs, and says A2000 on the back.)
2. If I select 1.3, will I be able to use games from disk without the hard drive trying to boot up?
3. Will I have to fit a switch to turn off the hard drive to use 1.3, and if so how?
4. How do I set up the hard drive to 2.04? My install disk will ask for Workbench 1.3.
5. Can I fit a bigger hard drive to my A2090? In a back issue of *Amiga Shopper* someone said it was a piece of junk, but if so, why?
Nick Price
Harrogate
N. Yorks.

1. You have an Amiga B2000. No A2000s had mono video output.
2. The hard drive will try and boot up, but if you have a bootable floppy disk in the drive this will boot in preference to the hard disk
3. It may be possible to switch off the autoboot on your controller, but without a manual I can't help here.
4. Use the Install 2.04 disk that comes with the Workbench 2.04 upgrade kit and it will copy everything necessary to your drive and delete every old 1.3 file that is no longer required. It will not delete any of your programs or data from the drive.
5. You can fit a larger MFM drive, but again without the manual you're going to have problems. It was an extremely tricky job even with the manual, but since the controller lacked many features now regarded as essential (like booting from an FFS partition), and is notoriously unreliable as well, it's good as a cheap first hard drive, but I wouldn't waste money expanding it if I were you. ***JR***

WHAT'S THE BUZZ?

GENERAL

My system works fine, but recently I have noticed that when it's accessing Fast memory on the external expansion there is serious interference with my radio (which is situated near my Amiga). It only interferes with FM wavebands though. Is this normal or should I send back the memory board? Will it damage my Amiga?
Steve Thatcher
Sutton
Surrey

The problem is due to RF interference from your expansion. In the US this sort of expansion would be illegal – any consumer electronic items have to have enough shielding to prevent this kind of interference. You can try wrapping aluminium foil around the expansion case to see if this helps, but it is likely that it won't. Have a talk with the suppliers and see if they have any suggestions. Perhaps they now have a model with better shielding you can upgrade to. Alternatively, you might just have to move the radio around till the problem goes away. ***JR***

GIVING UP THE GHOST

HARDWARE

I have an Amiga 500 with Kickstart 1.3. My GVP HD+ has a 120Mb Maxtor hard disk and 8Mb of RAM. While I'm using it, every so often it powers down, the fan stops and the drive stops spinning. After about five seconds it will start whirring and boot up again. This is becoming regular, especially from a cold start-up. It is very annoying because it crashes some programs (games in particular) or produces read/write errors. What is causing it and how can I stop it? Is it the power supply or having the 8Mb RAM on board?
Jason Li
Portabello
Edinburgh

Your problem sounds like a faulty power supply, or a bad connection from the power supply to the unit. Try getting a replacement power supply from your supplier, and if this does not work return the whole unit. It should handle 8Mb of RAM and a hard disk without these problems. ***JR***

UPGRADE OR TRADE?

BUYING

I have an A500, and my main uses for it are running *VistaPro 2, ProPage 3, Imagine 2* and *Real 3D.* Unfortunately, the machine isn't really up to the task, especially when there's a lot of screen rendering to be done. Should I purchase the Progressive Peripherals 040/500 33MHz upgrade or save up and get the new Amiga A4000/040 with the new AGA chipset and Workbench 3?

If I get a PPS 040/500 upgrade with 8Mb of 32-bit RAM on board, will there be enough space in my A500 to fit an ICD Flicker Free Video 2 as well? I am also interested in *OpalVision,* but I don't know much about it. Will I be able to run it on this setup?
Jason Li
Portabello
Edinburgh

The PPS 040/500 was reviewed as part of our comprehensive feature on upgrading your A500 in *Amiga Shopper* 27 and scored an overall rating of six out of ten – it certainly speeds up the A500 (in fact, you can't make one go any faster), but it's a real hassle to fit and the RAM is not on SIMMs (Single In-line Memory Modules) and is not socketed, so it would be difficult to expand it from the 6Mb it comes with as standard to the 8Mb you want. (If you want the full details and missed that issue, turn to page 116.) Also, the ICD FFV2 and the Progressive 040 board will not both fit in the Amiga 500.

Opalvision was reviewed recently in *Amiga Shopper* 20. (This issue is also still available.) The *Opalvision* hardware mounts in the video slot of the A1500, A2000 or A3000 – an external version for A500s and A600s was due, but I have not seen this yet. Besides, *Opalvision* costs £899, and if you have this sort of money to spend on top of an upgrade board (the PPS 040/500 is over £1,000 itself), I'd suggest that an Amiga 4000 would be your best option. The quality of High Resolution HAM-8 images on the Amiga 4000 is indistinguishable from 24-bit *Opalvision* images, and you will have no future expansion worries, as you will with the Amiga 500. ***JR***

DJ FONT CARTRIDGES

PRINTERS

Which word processors can access the font cartridges that plug into the Hewlett-Packard DeskJet 500?
Mr Andrews
Gerrard's Cross
Buckinghamshire

Currently only *Protext* (from Arnor ☎ 0733 68909), because only *Protext* allows you to send printer-specific control codes in order to directly control the features of the printer. Keep in mind that this will involve you reading the printer manual and the *Protext* manuals, and learning how to switch these features on and off – it's a little like programming, and may take a while to get used to.

The alternative is to have a separate printer utility that can control all the features of the printer via a special printer driver, and the only package that can fully control font cartridges (for all DeskJets and LaserJets) is *Studio* (from JAM ☎ 0895 274449). ***JW***

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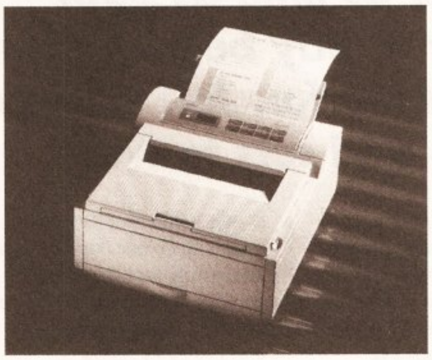
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Commodore 1960	14"	.31	MED	NO	MULTI	POA
Commodore 1940	14"	.39	MED	YES	DUAL	POA
Commodore 1942	14"	.28	MED	YES	DUAL	POA
Microvitec Cubscan	14"	.31	MED	NO	MULTI	POA
New Horizon Vanilla	15"	.28	HIGH	NO	MULTI	POA
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Ready, setter, go

If you've always wanted to get into DTP for as little as £50, PageSetter 3 may be just what you're looking for. Jeff Walker loads it up and sets to work...

There's been so much happening recently on the DTP scene that I haven't had a chance to tell you about a number of things. Probably the most important of these is *PageSetter 3*. First launched back in the mists of Amiga time, *PageSetter* was intended to be Gold Disk's "entry-level" DTP package, a cheap and cheerful program that would get you into desktop publishing enough to want to buy Gold Disk's bigger and better *Professional Page*.

That reasoning remains today, the difference being that while the original *PageSetter* was about as useful as a chocolate floppy disk, *PageSetter 3* is in many respects a better desktop publishing system than were the early versions of *Professional Page*.

PageSetter 3 can do an awful lot, so perhaps it would be best to describe some of the more obvious things that it *can't* do first.

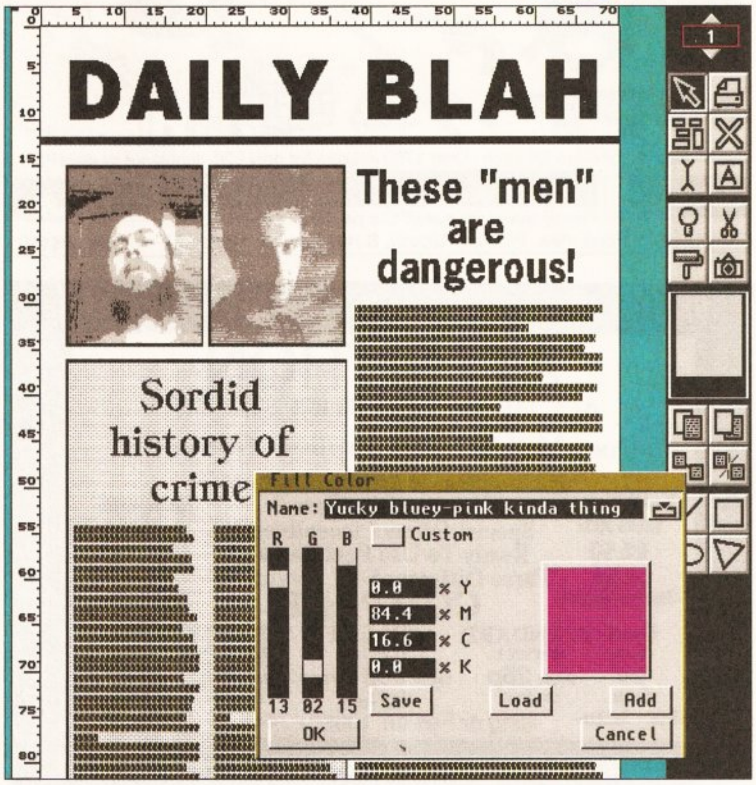
It cannot rotate text or graphics. It cannot create pages bigger than 17 inches by 17 – A3 paper is around 11.69 inches by 16.54, so that's about the biggest standard size paper you can work with. It cannot automatically kern characters, although you can manually adjust the space or "tracking" between characters. It cannot output PostScript colour separations, although it is able to create colour PostScript files (or output to colour PostScript printers), which may very well be good enough for your needs. It cannot import graphics formats other than IFF-ILBM and *Pro Draw* "clips".

Apart from the graphics format support, the other "cannots" are features that don't really matter to DTP beginners. There are a handful of other specialised features that *PageSetter 3* doesn't have, but these are features that only professionals will miss.

PageSetter 3 is not a minor update. The differences from *PageSetter 2,* which has been knocking about essentially unchanged for three years, are enormous. The most obvious changes are full colour support and the addition of integrated text and graphics editors.

The AGA screen modes are supported, so you can desktop-publish in 256 colours if you like, although the program runs quite a lot faster in black-and-white mode. Your palette is not limited to 256 colours. With the RGB colour sliders you can set up the maximum 4,096 that are possible using that system. You can make more available by using the CMYK colour system. Each colour – cyan, magenta, yellow, and black – can have a value from 0 to 100%, in 0.1% increments, which works out to several million different colours, although you are actually limited by the number of colours supported by the Colour requester, which I believe is 65,000 (I can't find any mention of it in the manual, but that's the number supported by *Professional Page).*

In practice I doubt if you'll find yourself using more than a few dozen colours in any one document, and a number of standard colours are already set up, including some shades of grey.



The most obvious difference between PageSetters 2 and 3 is that the new version has full colour support. (Giving the colours naff names is optional.)



PageSetter 3 comes with just one CompuGraphic font, but many more are available, both commercial and PD.

The text editor supplied with *PageSetter 3* is *AE,* essentially the same one that comes with *Professional Page,* and it is a slightly cut-down version of *TransWrite.* There is a "hotlink" between *PageSetter 3* and *AE,* so you are able to send text from *PageSetter 3* to *AE,* edit and check the spelling, and then "send it home" again to *PageSetter 3.* For this to work, obviously you need both programs running at once, which means you'll need more than 2Mb of memory.

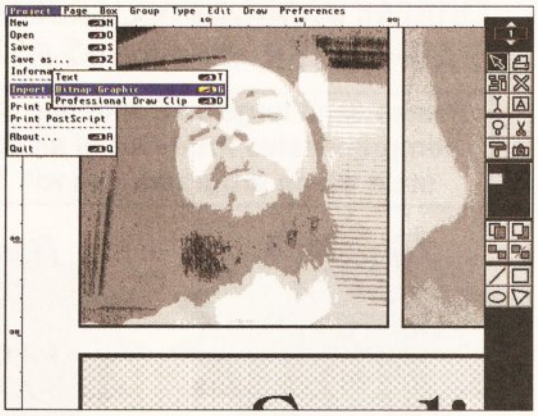
The graphics editor, *GrE,* works in much the same way. An IFF-ILBM graphic can be sent to *GrE,* edited or retouched, and then sent back to *PageSetter 3. GrE* is an extremely cheap-and-cheerful painting program. It works only with IFF-ILBMs of up to 32 colours and has a limited set of drawing tools. It's no *Deluxe Paint,* but it might come in handy now and then, I guess.

As with *AE,* hotlinking to *GrE* requires memory by the bucketful. If you don't have enough, the hotlink may fail or – you know the Amiga when it runs very short of memory – the program might crash.

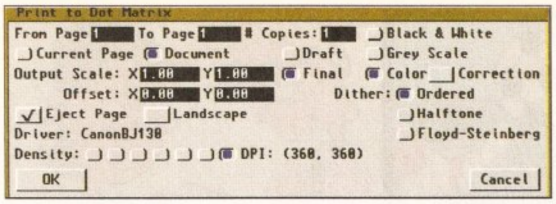
KISS AND...

Page make-up – the act of arranging text and graphics on a page – is done in *PageSetter 3* itself, and more than half of the manual is rightly dedicated to it.

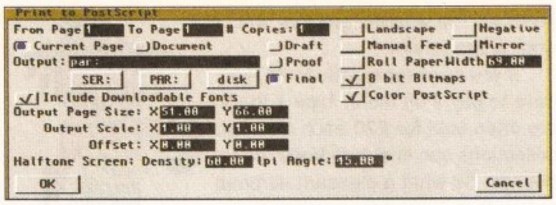
You have full control over page design. Text and graphics are imported into "bounding boxes", and these bounding boxes can be re-sized freely and placed anywhere on the page you like. Text boxes can be



Only two kinds of graphics formats are supported, IFF-ILBM and Pro Draw structured drawings.



Colour dot-matrix owners can now output in colour from PageSetter and actually use their machines' capabilities.



No colour separations, I'm afraid, but mono and colour PostScript support was lacking from previous versions.

linked so that words can flow from one column to another and from one page to another. Five magnification levels from 25% to 200% enable you to see an overall view of your complete layout and a magnified version so you can read text that has been set in small sizes.

One CompuGraphic typeface is provided, Times. There are many more available, both commercial and shareware.

Any IFF-ILBM graphic can be imported, including HAM and 24-bit. These can be re-scaled and cropped either by using the "handles" around the bounding boxes or by changing values in the Active Box requester, which you can bring up by double-clicking on the box.

Pro Draw structured drawings or "clips" can be imported. These may be displayed as wire-frame outlines for speed, or in full colour. On the A1200 and A4000, up to 256 real colours can be displayed; older Amigas show only 16 real colours. Any other shades are displayed as coloured "patches" – dithered representations that aren't the true colours but allow you to see the differences between up to 1,000 colours on-screen at once.

Output can be sent to any Amiga "Preferences" printer – any printer for which there is a Preferences printer driver – or to a PostScript device or file. Printing to dot-matrix printers is slow, but this is merely a fact of life due to there being so much data to be calculated and sent to the printer. Results are excellent; printing is achieved at the highest resolution your printer can manage – well worth the wait.

PostScript output is black-and-white or colour, but not colour separations, so *PageSetter 3* is not a DTP package for the professional colour publisher. The PostScript fonts built into PostScript output devices can be used, and others can be downloaded automatically by the printing process. A utility is provided which converts PostScript Type 1 fonts into CompuGraphic fonts and downloadable PostScript fonts.

MODEST NEEDS

Probably the most important fact about *PageSetter 3* is that it will run on a 1Mb Amiga with two floppy drives, bringing low-cost, high-quality DTP into the range of the average home user.

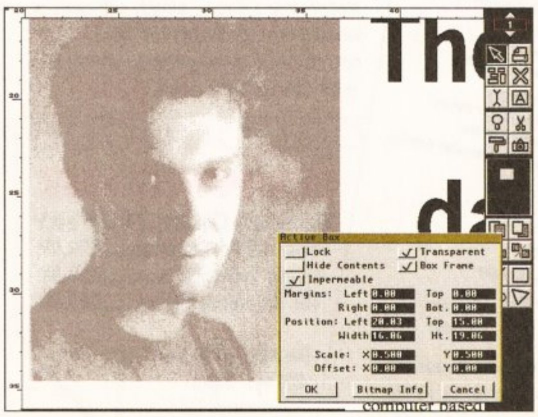
Obviously you'll be limited as to what you can achieve with just 1Mb – there will be no hotlinking to *AE* and *GrE* for example – and working from floppies will restrict the number of different fonts you can use in one document and will mean swapping disks quite a lot. But the point is that you now don't have to spend a fortune to be able to experiment with high-quality desktop publishing.

An installation program is supplied that updates your Workbench disk with some new run-time libraries and creates a whole diskful of structured clip art. No other special installation is required. Hard drive owners are provided with an automatic installation program.

If you've never used desktop publishing software before, be aware that it is not like word processing, not even like the so-called "document processing" with one of the fancy word processors like *Final Copy II, Wordworth, ProWrite* and so on. The main stumbling block will be the bounding box concept – but once you've become comfortable with the fact that before you can start loading and positioning text and graphics you have to create boxes for them first, everything else will begin to fall neatly into place.

Desktop publishing software doesn't do it this way to make it awkward to use, it does it because this way of working provides greater flexibility over page design. If you don't require this flexibility, or if you are not prepared to learn a new way of working with text and graphics, then perhaps you'd be better advised to look at one of the document processors instead. But keep in mind that document processors inflict on you a fairly rigid set of design rules – they are easier to use because the software makes most of the decisions, and a large number of those decisions are "Sorry, you can't do that."

If, on the other hand, you've always fancied yourself as a desktop publisher, *PageSetter 3* provides you with an excellent way to get started.



Any element of the page can be positioned or sized very accurately using the Active Box requesters.

SHOPPING LIST

PageSetter 3 .... £49.95
By Gold Disk Inc, PO Box 789, Streetsville, Mississauga, Ontario, Canada L5M 2C2.

Distributed in the UK by:
Silica Systems, 1–4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX.
☎ 081 309 1111

CHECKOUT PAGESETTER 3

Features ●●●●●
There's nothing lacking for the DTP beginner.

Documentation ●●●○○
Gold Disk manuals have never been particularly good. Adequate is about the best you can call them.

Ease of Use ●●●○○
The learning curve can be fairly steep if you are new to desktop publishing, mainly because much of what you can do is actually determined by your design skills rather than program features.

Speed ●●●●○
A bit slow on a basic 68000 Amiga, but then so is pretty much everything that is this powerful. On faster Amigas it's plenty fast enough.

Value for Money ●●●●●
Professional colour publishing for under £50. Need I say more?

Overall rating ●●●●○
PageSetter 3 really is an excellent package at its level. There's room for improvement, obviously, but for this price, how can you complain?

Quality fonts and clips

Digita International have released some interesting *Wordworth* accessories. The *Clip Art Collection* has been extended by five volumes from two to seven, and there are three new collections of genuine Agfa CompuGraphic fonts.

All the clip art is in IFF-ILBM format, and considering that 99.9% of Amiga applications that work with graphics can support this format, the entire collection can be used with other programs, not just *Wordworth.*

The first two volumes have been around for a while. Volume One is all black-and-white art, and covers many different subjects like signs of the zodiac, arrows and hand symbols, credit cards, sports, borders and designs, and a lot else besides. In all there are more than 200 clips, literally something for everyone. Volume Two is equally miscellaneous, only this time in 4, 8 and 16 colours. Coloured graphics take up more disk space, so there are only about half as many clips on this disk, including some real cute original cartoon characters, ink stamps like URGENT and OVERDUE, and some useful lines and boxes which address the *Wordworth* shortcoming of not having any drawing tools.

The success of these two volumes convinced Digita that more were needed. The first two disks were created "in-house" by a resident Digita artist; the five new ones have been licensed from various computer clip art sources and converted to IFF-ILBM format, and they have been put together into definite theme packs.

Volume Three is mainly 8-colour and 16-colour cartoons, with a small collection of generic two-colour symbols thrown in, mainly warning signs – things like "No Smoking" and "Do Not Touch". Volume Four is much the same – mostly coloured cartoons, some two-colour symbols, but all of them different from what's in Volume Three of course.

Volume Five deals with sport – Athletics, ball sports, snow sports and water sports, with a "Misc" directory containing some of the more specialised sports like tug-of-war, kendo and darts, all in either 4, 8 or 16 colours.

Science and Nature is the subject of Volume Six. Some popular animals are present, including a few classic combinations like a lion and a lamb, cat and fish, bird and worm. There are a few anatomy clips; lots of landmarks like Stonehenge, St Paul's Cathedral, Ayer's Rock and an English pub; a People directory with

some specific faces like Einstein and Shakespeare, but mainly generic figures like a chemist and a knight; and on top of this there are Communication, Computing and Nature directories.

Volumes Three to Six contain about 90 to 100 clips each, but Volume Seven, Geography and Transport, is another biggy, with more than 200 graphics on it. Most are international flags – more than 150 of them – in either four or eight colours. There's a dozen or so maps, some road signs, and some trains and planes. (And a boat, but that didn't rhyme.)

At £14.99 each (except Volume One, which is £9.99), there can be no doubt you are getting excellent value for money. The whole collection features about 1,000 images in total – and while I haven't had time to look at them all, I've yet to find a poor one. There are various "PD" clip art collections that can be bought more cheaply, but anyone who has travelled this route will know that after sorting the wheat from the chaff you normally can't make a bread roll from what's left. With the *Wordworth* Clip Art Collection you'll have dough to spare.

FONTS OF USE

If the number of adverts peddling them is anything to go buy, there must be a growing market for scalable fonts. Most are advertising PostScript Type 1 fonts, but thanks to the availability of one conversion program or another most of these are now available in CompuGraphic format too.

The trouble with these "PD" fonts is that you can never be sure of their quality. Some might be poorly designed, or have important characters like the pound sign or even a number of alphanumeric characters missing, or give you just capitals, or no numbers, or missing punctuation marks...

But they don't cost much, so you can generally live with the glitches and work around them.

If you want top-quality fonts, you have to pay a bit more. Type 1 fonts are often sold for £20 each or more; collections can cost hundreds of pounds. So what a pleasant surprise to find that Digita have released three genuine Agfa CompuGraphic font collections, all of which work out to less than £2 per font.

The smallest collection is called *Pride and Presentation,* 20 fonts designed to bring fun and style into your documents. There's a Times New family (by "family" I mean the same typeface in four styles: normal, italic, bold and bold italic) and Shannon Book to go with the Shannon Bold font that comes with *Wordworth.* There are three "clip art" fonts that contain symbols to do with games and sports, holidays and transportation. The remaining 12 fonts are of the "fancy" variety, useful for things like headings, signs and invitations.

None of the fonts in the *Pride and Presentation* pack is duplicated in either of the other two packs, so there's no danger of paying for the same font twice if you buy two packs. This isn't true of the *Classic Collection* and *The Reference Library* packs.

The *Classic Collection* is 25 fonts, all of which, except two of the three "clip art" fonts, are also in *The Reference Library* pack, which contains 50 fonts. So it would be wise to have a good think before buying the *Classic Collection* – if you buy it but then decide that you would like some of the fonts in *The Reference Library* pack, you'll be paying again for 23 fonts that you already have.

Both the *Classic Collection* and *The Reference Library* packs are based on families of fonts. Of the 50 fonts in *The Reference Library,* there are three or four styles each of Nadianne, Avant Garde Gothic, Goudy OldStyle, Clarendon, Futura, Garamond, Hiroshige, and Univers. None is a complete type family, which is often 30 or more fonts, but the most popular styles are there, including normal, italic, bold, bold italic, extra bold and condensed. Most of these fonts are the kind you would use for the main body text of a document. The pack is completed by a couple of "clip art" fonts and 11 fancy fonts that could be used for headings and the like.

The *Classic Collection* has two of the "four-style" families that are in *The Reference Library,* Goudy OldStyle and Futura, and a mixed selection from the other fonts in *The Reference Library,* including two styles of Garamond and two of MicroStyle.

Each pack comes with a utility that enables you to easily install any or all of the fonts, both for use with *Wordworth* and with Workbench 2 or greater. Soft-Logik's *PageStream* can also use these fonts, but not *Professional Page* and *PageSetter* because these Gold Disk products require some other files in order to work with CompuGraphic fonts. If you own *TypeSmith* you can of course import the fonts from these packs and export them using the feature of *TypeSmith* that can create the necessary extra Gold Disk files.

And, of course, any program that is able to use Workbench CompuGraphic fonts will naturally be able to use any of the fonts in these packs once they have been installed for use by Workbench.

If you're in the market for CompuGraphic fonts and you've got some money burning a hole in your pocket, then the best buy has to be *Pride and Presentation* plus *The Reference Library,* which will cost a whisker under £100 for 70 commercial quality fonts, which is less than £1.50 each. AS

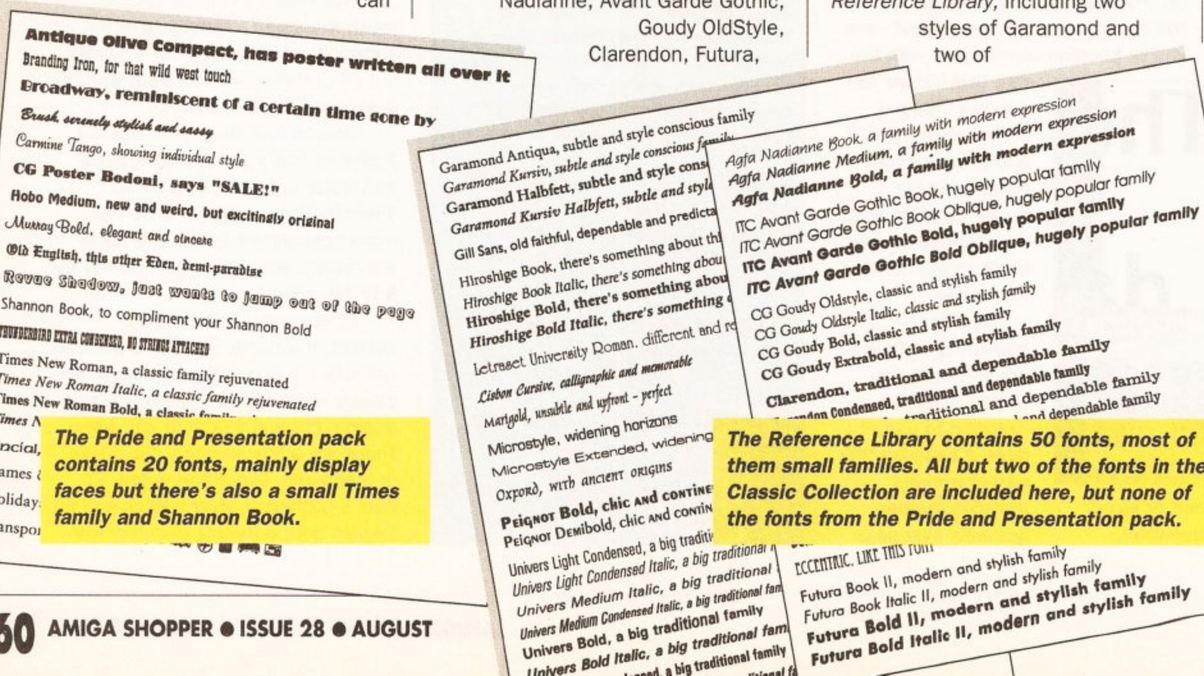


A small selection which shows the quality of the graphics in the Wordworth Clip Art Collection.

SHOPPING LIST

Wordworth Clip Art ..£14.99 each
Pride and Presentation.....£29.99
Classic Collection £39.99
The Reference Library.....£69.99

Distributed in the UK by: Digita International Ltd
☎ 0395 270273

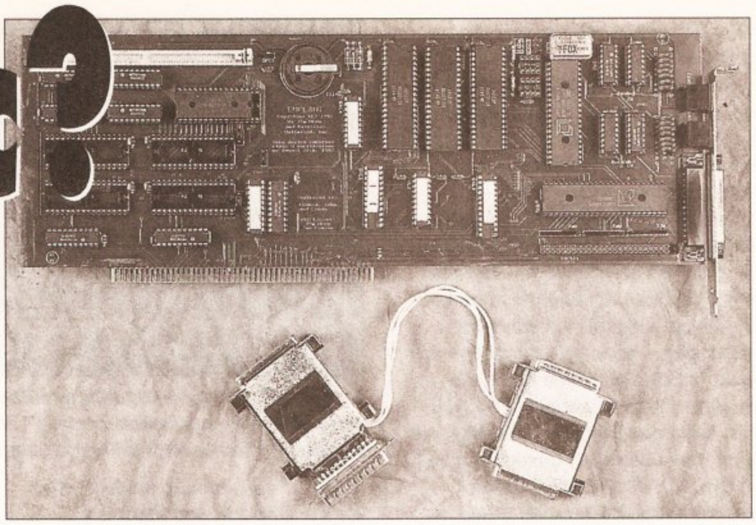


The Pride and Presentation pack contains 20 fonts, mainly display faces but there's also a small Times family and Shannon Book.

The Reference Library contains 50 fonts, most of them small families. All but two of the fonts in the Classic Collection are included here, but none of the fonts from the Pride and Presentation pack.

AmigaMac?

An Amiga running high-end Apple Mac programs like Photoshop? Richard Baguley does it using Emplant, the latest Mac emulator.



There's a lot of powerful, professional-level application programs out there for the Apple Mac, and the Emplant board could enable your Amiga to run them.

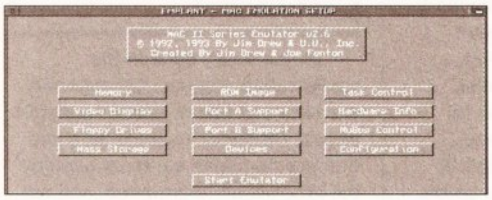
If you go into any advertising agency, design studio or Future Publishing office, there is one type of computer that you will always see: the Apple Mac.

The dominance of the Mac in the "creative" computing fields is undisputed, and with excellent programs such as *Quark Xpress* and *Photoshop* being continually improved, it's unlikely that any other type of computer will challenge it. It's also unlikely that these programs will ever come out on the Amiga, so if you want to use them, you'll need an emulator which turns your Amiga into a Mac. Enter the *Emplant...*

Hardware wise, the *Emplant* is a Zorro II card which fits into one of the expansion slots on any A1500, A2000, A3000 or A4000. This card is reasonably sparsely populated, with several vacant sockets. On the deluxe model, two DIN-style serial ports and a 25-way D connector are located on the backplate. The serial ports are completely different from the standard Amiga ones, but any lead or peripheral designed to work with an Apple Mac fits into either with no problem. The usual setup is that Port A is for use with peripherals such as modems, while port B acts as an Appletalk connector, enabling you to connect into a network with other Apple Macs, so you can copy files between machines, use E-Mail programs, etcetera.

The first step in emulating an Apple Mac is to obtain a copy of the Apple ROMs for the emulator to use, and there are two ways of doing this. The first involves opening up a Mac, removing the ROMs and putting them into the *Emplant* card. It can hold either four DIL (Dual In-Line) ROM chips or a SIMM (Single In-line Memory Module) ROM chip, and software is supplied which will read these chips and save their contents to a disk file, which can be loaded in by the emulator. You do need to be rather careful about which chips are used – most models of Mac will not have usable ROMs. You need either a Mac II, a Mac IIx, a Mac IIsx or an SE30 which has a high-density disk. The *Emplant* software will quite happily read any other type of ROM, but the emulator software will be unable to use it.

The other way is much easier. Included with the *Emplant* is a small program called *ROMINFO,* which, when run on a Mac, will analyse the ROM, and if it's usable, save it out to a disk file. Copy this over to the Amiga via either a PC disk or the *SYBIL* utility to read Mac disks, and you have a usable ROM image. This is perhaps a little iffy on the copyright side of things, so don't be surprised if after you've copied the ROM from somebody else's machine, a few large gentlemen from Apple knock on your door in the middle of the night. The best policy is to buy appropriate ROMs from an Apple dealer.



The main screen of the MacII program, where you set the various parameters for the emulation.

The heart of the emulation is the software which comes with the card. In theory, this card could emulate more or less any machine (and Utilities Unlimited, creators of the *Emplant,* are working on others, including Atari ST and Falcon, SNES and Sega Megadrive, with a PC emulator the next one likely to appear), but at the moment the only option available is for a Mac II. This is contained on a single floppy disk, and you can either run the emulation from floppy or install this on your hard disk. As well as the emulation program, several libraries necessary for the emulation to work are also on this disk, and the install program copies these over to the appropriate ports of your hard disk.

Emplant requires a small section of memory to be allocated for its own use, and you achieve this by adding an extra line to the beginning of your startup sequence, which reserves a small section of memory and reboots the machine. The second time round, it adds a couple of small patches to Workbench to make the Amiga and Mac multitasking faster. This only takes a few seconds, so it's no real hassle having to wait while your machine boots twice.

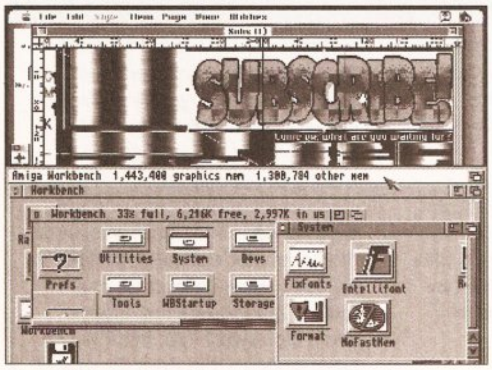
Once that's set up, you can set the emulation running. This is done by executing one of two script files, depending on what type of machine you have. If you're running on an A3000 which loads Kickstart from disk, you use the **Softlaunch_MacII** icon, and on any other machine you use the **Hardlaunch_MacII** icon. This is because machines which load Kickstart from disk use the MMU, so the *Emplant* software can't have exclusive control of it.



The initial screen you see on booting up your "Mac", with a few subtle additions by Emplant.

This then takes you into the main program, where you start the emulation running and set the various parameters:

- **Memory** – How much and what type of memory is allocated to the Mac. This is broken down further into four sections: system memory, video memory, ROM image and NuBus memory. These can be put in either Chip or Fast memory, but the emulation is extremely slow and unstable if Chip memory is used.
- **Video Display** – Included with the software are drivers for the Enhanced chipset, the new AGA chipset and the *Retina* graphics card. By default, the Mac boots up into two-colour black and white mode, but with the ECS driver it can go up to 16 colours, 256 on the AGA driver and 16 million on the *Retina* card (see the box on page 63). As you'd expect, using lots of colours does tend to slow the machine down somewhat, so it's best to use the minimum necessary for the program you're using.
- **Floppy Drives** – Which drives are to be used by the Mac emulation. If you're not using an A4000, you can only read from or write to DD disks (800K), via an external device called **Sybil.** A4000 users can use the internal HD drive to read or write to Mac HD disks (1.4 Mb).



It really is multitasking: drag down the Amiga screen to reveal... a fully-functional Mac!

- **Mass Storage** – If you are using an *Emplant* model with the SCSI interface, this is where you turn it on or off. This interface is designed for use with scanners, removable media drives and other peripherals. You can connect normal SCSI drives to it, but the Mac side doesn't always pick them up. However, considering that the *Emplant* software enables you to use any

valid AmigaDOS device, this isn't a problem.

• **ROM Image** – Here you define the directory where the ROM image is held, so the software can load it up into memory. It also checks the usability of the ROM image.

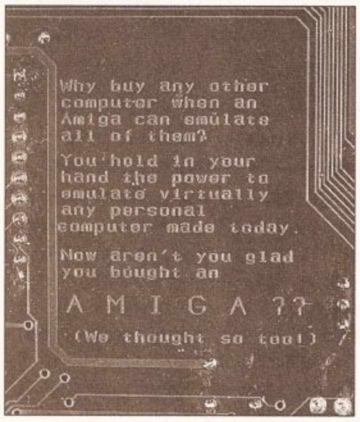
• **Port A and B Support** – If your *Emplant* has the two serial ports built in, then you can define whether the emulated Mac will use these ports or the Amiga's serial or parallel port.

• **Devices** – Here, you can define any valid AmigaDOS device which the emulated Mac can access. So, you can set a partition which the Mac will boot from. However, thanks to a bug in the Mac ROMs, the partition should not be bigger than 32Mb. If you do try and use a bigger partition, the size wraps around, so a 34Mb partition would appear to be 2Mb. Partitions do not necessarily have to be hard disks, so the Mac could access RAM disks, network devices, and so on.

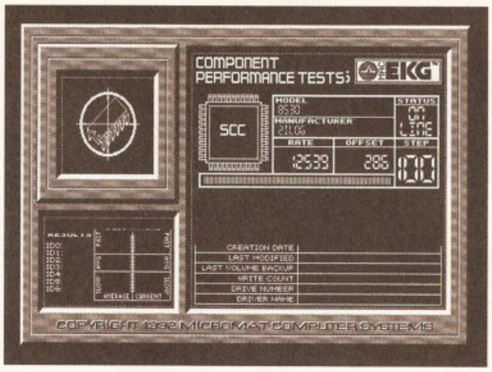
• **Task Control** – Various parameters to do with how much processor time programs running in the background are allowed.

• **Hardware info** – Tells you what's plugged into the board, and what state it's in.

• **NuBus Control** – NuBus is the Apple equivalent of the Zorro standard, which defines how expansion cards fit into the machine.



Most hardware just has serial numbers and such written on it...



Even the Mac diagnostic ProgramMacEKG (which does some serious "metal bashing" or hardware accessing) works on the Emplant emulator.

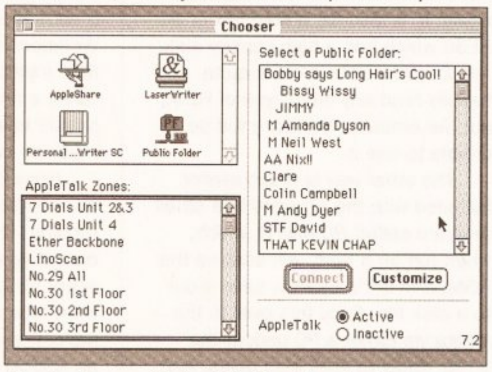
This has not yet been implemented on the *Emplant*, and there is at present no way of fitting NuBus expansion cards in an Amiga.

• **Configuration** – Enables you to save and load configurations, so you can have several different ones set up for different programs.

Once you've set all these, clicking on the **Start emulator** button at the bottom sets the emulator running. However, I can guarantee that the first time you try it, it won't work – it does need rather a lot of fiddling to get it right. But once you've got it right, it is extremely stable.

Starting the emulation successfully will give you a screen with the *Emplant* logo and a Mac icon asking for a floppy to boot up from. This is where the fun starts. If you're not working on an A4000, you'll need an extra device to read Mac disks, called **Sybil**. This is in the form of two small boxes which plug into the video and parallel ports. This will enable you to read DD (Double Density) Mac disks (which can hold 800K), but it is extremely slow, and **Sybil** does weird things to the video signal which mean that the display becomes distorted and loses its sync pulses. This means that it jumps all over the place, which is extremely disorientating and causes Commodore 1960 monitors to make some very curious noises. However, it does work, and it does enable you to read and write to Mac DD disks.

The difficulty is due to the curious way Apple decided to make their disk drives. An 800K Mac disk is divided into five zones, and the drive spins at a different speed for each zone. Obviously, an Amiga drive can't do this, so it uses some clever fiddling with the custom chips to read the data. It works, but it is extremely slow. There is a way around this, in that you can use a special *Emplant* disk format which can hold 800K of data. The software can read this without having to use the **Sybil** hardware, avoiding all of the hassles inherent in it. Software is included to copy disks from Mac to *Emplant* format, but again, it's very slow.



Emplant supports Appletalk networks. Here you see some of the curious things that the curious people who work around here call their Macs.

Macs also don't have a disk eject button – you eject a disk by dragging its icon into the waste-basket. On a real Mac, the disk is then ejected by the drive, but on the *Emplant* a small red cross appears on the screen, and you then remove the disk yourself. It sounds odd, but it works.

A4000 users are much better off using HD (High Density) disks, which can hold 1.4Mb on a Mac. Apple dropped the variable speed idea when they started using HD drives, so an Amiga with a High Density drive can read or write HD disks in Mac format without any screen distortions and at a speed close to that of a real Mac.

Frankly, trying to run any Mac off a floppy disk isn't a good idea, especially with the newer versions of the operating system such as System 7.1, which are very large. The only realistic option is to set up a partition or two for the emulated Mac to use on the hard disk.

SYSTEM REQUIREMENTS

If you're planning on using an *Emplant* card with your system, you'll need the following:

❶ **At least a 68020 CPU.** Since the *Emplant* only emulates a Mac II at present, only 68020 CPUs and above are supported – the ROMs from these machines won't run on a 68000 or 68010.

❷ **An MMU** (Memory Management Unit). This is necessary because the emulator uses the abilities of the MMU to copy the ROM image into RAM and point the Mac system in this direction when it tries to access the ROM. Utilities Unlimited are currently working on ways around this, but a solution is still several months off. Many accelerators use the EC model of the 68030 or 68040 chip, because it's cheaper. *Emplant* will not work on any machine that is fitted with one of these, even the A4000/030. (For the full details on accelerators, see *Amiga Shopper* 27. If you haven't got that issue, turn to page 116.)

❸ **At least 4Mb of Fast RAM.** If you're planning on running version 7 or 7.1 of the Mac operating system, this is the bare minimum. Don't expect to be able to run any serious programs in this, and the 256-colour video drivers will also need 1.5Mb for their use. As with most serious programs and hardware, it's a question of the more the merrier.

This is easily done in the configuration program, because the emulator can use any valid AmigaDos device. However, it should be noted that any partitions set to be used by the Mac will be reformatted, and will then appear as bad disks to the Amiga side of the machine. It's also very easy to accidentally set your Workbench partition to be used by the Mac, leading it to be reformatted and all of the data lost. Take my word for it. Caution is advised.

Booting from the Mac hard drive utilities disk will format your Mac partitions, and the Mac operating system can then be installed on to these. With DD disks, this process can take up to an hour and a half, but it's much quicker with HD disks.

One thing I would have liked to see is the ability for the Mac side to access an Amiga disk, or vice versa. At present, the only way to transfer files between them is via PC disks, or down a null modem link. Neither of these is particularly quick or easy to do. Fortunately, the writers of the

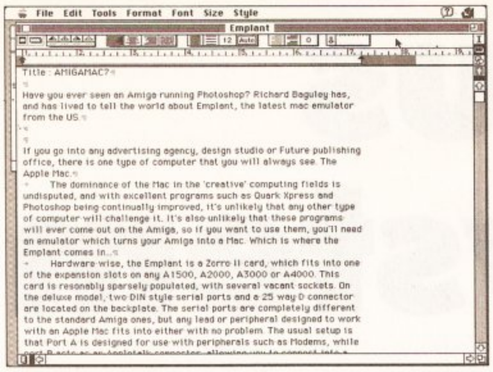
JARGON BUSTING

CPU – Central Processing Unit. The brain of your Amiga. This is the chip which carries out all the instructions of which programs are composed.

Finder – The Apple equivalent of the Desktop in Workbench. It's a graphical user interface where files and programs are represented by icons, and a mouse is used to manipulate these.

MMU – Memory Management Unit. A part of the CPU which controls how memory is accessed, and which can fool programs in thinking they are looking at one part of memory when in fact they are looking at another bit.

System 7.1 – The latest version of the Apple Mac operating system. It includes some support for multi-tasking (earlier versions offered some task-switching), but it's very basic compared to what the Amiga has been doing for years...



And just to prove that it works, this is the Nisus WP program I used to write the review, grabbed on the Amiga side by the PD program Quickgrab.



Given enough memory, even professional-level programs like Quark XPress, the DTP package used to create this mag, will run on the Emplant.



The Mac image processing program Photoshop running in 256-colour mode (honest), with a 24-bit file generated by Vista Pro 3 on the Amiga.

software are currently working on a solution, but it probably won't be out for several months.

Once the operating system is fully installed, you can start customising the Finder (the Mac equivalent of the Workbench). A variety of control panels enable you to alter the various attributes, including the sound (although the emulator doesn't yet support sound under System 7 and above), time and date, how icons are displayed, and colours. This last one is noteworthy because unlike Workbench this determines the mode for all programs that run. If you set it to four colours, all programs will only be able to use four colours. Using the AGA driver gives you the option to have up to 256 colours, although there is quite a speed penalty for running in this mode. You also need to be careful about the free RAM situation, because if you increase the number of colours and there isn't enough RAM for this mode, the emulator will crash. A safe bet is to keep at least 1.5Mb of Fast memory free if you're planning to change between the various modes.

So can it run Mac programs? The emulator coped with everything that I could throw at it, with one exception. It worked fine with the word processor *Nisus*, the illustration program *Photoshop* and the DTP program *Quark XPress*, although the last two are extremely greedy for memory and were rather limited on a 10Mb A4000/040. All of these worked fine in all modes, including the 256-colour one, although this was rather slow. However, the emulator also includes a video driver for the *Retina* graphics card, which gives both a 256-colour mode and a 16-million-colour one. More details are given in the box below headed "I want to see your true colours..."

I also tried several Mac games, and all of these worked with no problems I could discern, including several PD games and a commercial version of *Tetris*.

The only program which failed to work was a diagnostics program called *MacEKG*. This takes over the Mac completely and carries out a series of diagnostic tests on various aspects of the hardware. This fell over very quickly when used immediately after booting up the Mac, but worked perfectly and passed all of the tests when it was run immediately before shutting down the machine. This was probably to do with the fact that the emulator was still setting up various aspects of the emulation when the program began "bashing the metal" or accessing the hardware directly without going through the operating system. It's interesting to note that the emulator passed all of the tests, even when I switched over to the Amiga side and set a couple of programs running. Obviously, Utilities Unlimited have done a good job in setting up the emulation at a low level, so even programs which try to access the hardware directly should work. This isn't widely done in Apple Mac programs, but some PD programs have been known to do so.

The only other known problem is with the word processor Microsoft *Word*. According to Utilities Unlimited, this program fails to work because Microsoft broke the rules when writing it, and it does things that fall outside Apple's programmer's guidelines. They are investigating, and hope that a new version of the emulator software will get around this.

The fundamental question to ask with any emulator is: does it give you a machine which you could use for serious work? Let me answer that this way. In normal circumstances, I would write this review on the Mac Classic II which I use for all of my writing. However, this particular review has been written on an Amiga A4000/040, using the Mac word processor *Nisus* running on an emulated MacII. It runs much faster than my Classic II, even when running in 256-colour mode, and hasn't crashed after startup once. By pressing [Left Amiga] and [N] I can switch back to a decent operating system (Workbench 3) with the Mac still running happily in the background.

There are still a few bugs in the Mac emulation, and some things that still need to be added, but the *Emplant* is a seriously good piece of kit. It runs faster than *A-Max +*, and has the added advantage of not completely taking over your Amiga. If you have a powerful machine, don't mind fiddling with the depths of its workings and want to run serious Mac programs, *Emplant* is the only real option. AS

• Richard Baguley can be contacted at the *Amiga Format* E-Mail addresses: AMFORMAT@CIX.COMPULINK.CO.UK or 2:250/107.95 on Fidonet.

SHOPPING LIST

***Emplant* emulator**
by Utilities Unlimited

Basic model: £254.95
Option A: £299.95
(includes Serial and Appletalk ports)
Option B: £299.95
(includes SCSI-II interface)
Deluxe: £329.95
(includes serial and Appletalk ports and SCSI-II interface)
Sybil: £59.00

Distributed by: Blittersoft, 40 Colley Hill, Bradwell, Milton Keynes, Bucks. MK13 9DB
☎ 0908 220196

CHECKOUT
EMPLANT

Features ●●●●○
Powerful Mac emulation which fully uses the Amiga's resources.

Documentation ●●●○○
The draft version of the manual supplied with the card was rather basic, but contained all of the necessary information.

Ease of Use ●●●○○
It's definitely not a card that you can just plug in and run. Requires a lot of fiddling around and setting up.

Speed ●●●●○
Gives you a very fast Mac, and it can multitask too!

Value for Money ●●●●●
Excellent value, and with other emulations on the horizon it can only get better!

Overall rating ●●●●○
There are still a few aspects that need improving, but if you've got a powerful Amiga it's an extremely good way of getting yourself an Apple Mac.

I WANT TO SEE YOUR TRUE COLOURS...

One recent development is the addition of support for the *Retina* graphics card, which means that you can have a Mac running in either 256 colours or 16 million. This new video driver works, but it's still not completely stable. You will also need a vast amount of memory – the driver seems to need at least a couple of Mb for its own use. Running on a 10Mb A4000/040, *Emplant* could cope with the Mac being switched into 16 million colour mode, but couldn't run any programs. To do any serious work in this mode, Utilities Unlimited recommend more than 16Mb of memory – the more the better.

Running the card in 256-colour mode is definitely faster than using just the AGA chipset – it's not having to argue with the rest of the system for access to these chips and memory. If you want to run both the Mac emulator and Workbench on the *Retina* card, you'll need the 4Mb model – the emulator takes 2Mb for its own use.

• *Retina* was reviewed in *AS* 27. If you missed it, turn to page 116.

• Thanks to Martin Lowe of the Amiga Centre Scotland for the loan of a *Retina* card for this test.

Build a virus warning system

This issue, Amiga Shopper reader Steve Elmer picks up £25 for this easy hardware project. Send us a design and you could be next!

Have you ever worried about all the potential havoc that an attack by a virus could wreak on your beloved machine? Could you face losing all that data? What's more, you could even put at risk all the software you have carefully accumulated. Well, how about building the simple virus warning circuit that forms our hardware project this month – that way you'll be safe in the knowledge that no "boot block" viruses will end up sneaking on to your system unawares. The virus checking circuit was submitted by Steve Elmer from Bildeston in Suffolk, for which he picks up an *Amiga Shopper* cheque for £25.

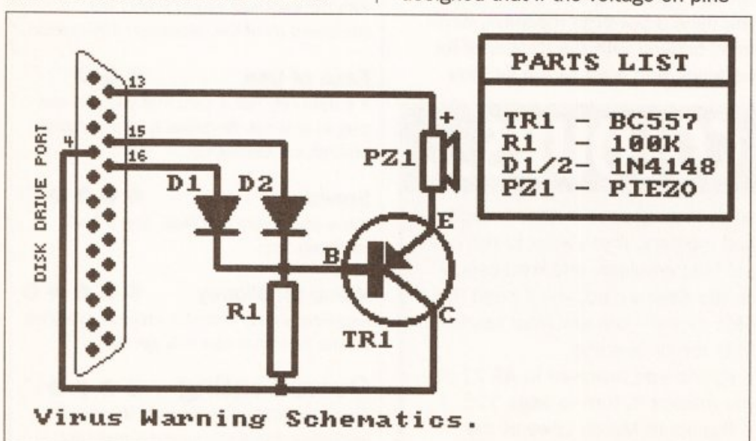
You don't need to do any fiddling about inside the Amiga to build or install the virus checker – it simply connects to the external disk drive port. If you have a second floppy drive, then the circuit will still work, but you will need to connect it "in-line" with the additional drive. The function of the circuit is to alert the user whenever anything is written to the "boot block" of a disk – once a disk has been initially formatted it's not normally necessary to write any further information to this area, and if you're just performing ordinary load and save operations you certainly won't need to. If you do write to the boot block on a disk once you've connected up the virus detection circuit, then you'll get to know about it quickly – the piezo sounder will give you an audible warning.

> "will sound a beep whenever anything is written to a disk's boot block"

You don't exactly need to spend a fortune to build this virus checker. Take a look at the parts list and you'll see that you can get all the bits required and still have change from £2.

HOW IT WORKS

Look at the circuit diagram and you'll see that it requires only five electronic components: two diodes, one resistor, one transistor and a piezo sounder. The circuit is so designed that if the voltage on pins 15 and 16 goes low while at the same time the voltage across pin 13 goes high, then the transistor will switch and the piezo sounder beeps to give warning of a potential virus. Pin 13 is the disk side indicator, pin 15 indicates the head position for the drive and pin 16 signals whether or not the disk is write-enabled. The fourth pin we take a connection from is pin number 4, which is a ground output.



The circuit diagram for this month's simple hardware project and the parts you'll need for it. They'll cost you under £2 – see "Shopping List" opposite.

VITAL – READ THIS FIRST

CAUTION If you've never tried your hand at building electronic circuits before or you have any doubt about having a steady hand with a soldering iron, then this month's hardware project is not for you. Although this is a very simple circuit to assemble, the cheap way of learning more about practical electronics is *not* by messing around with your Amiga – make a mistake while building this circuit and you certainly run the risk of damaging your precious machine.

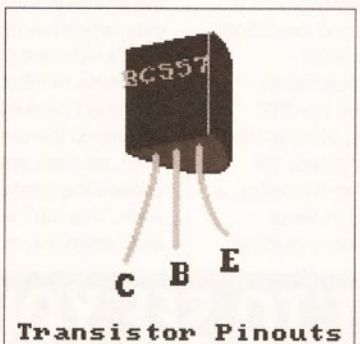
If you want to find out about constructing electronic circuits then get yourself one of the many "teach yourself" books available. They can be obtained from good bookshops or from electronics shops such as RS Components or Maplin. Both of these companies have shops situated in many of the UK's larger towns and provide a mail order service based on their extensive catalogues. (See the box headed "Shopping List" opposite.)

You'll find that it need not be a very expensive hobby – there are lots of interesting circuits that you can build for just a pound or two's worth of components. You can get away with spending very little money on tools, at least to begin with – but a good soldering iron is an essential. Make sure you choose one that isn't too powerful – electronic components, chips especially, are easily damaged by excessive heat. An iron rated at between 15 and 20 watts is ideal – and you should expect to pay from £12 to £15 for one.

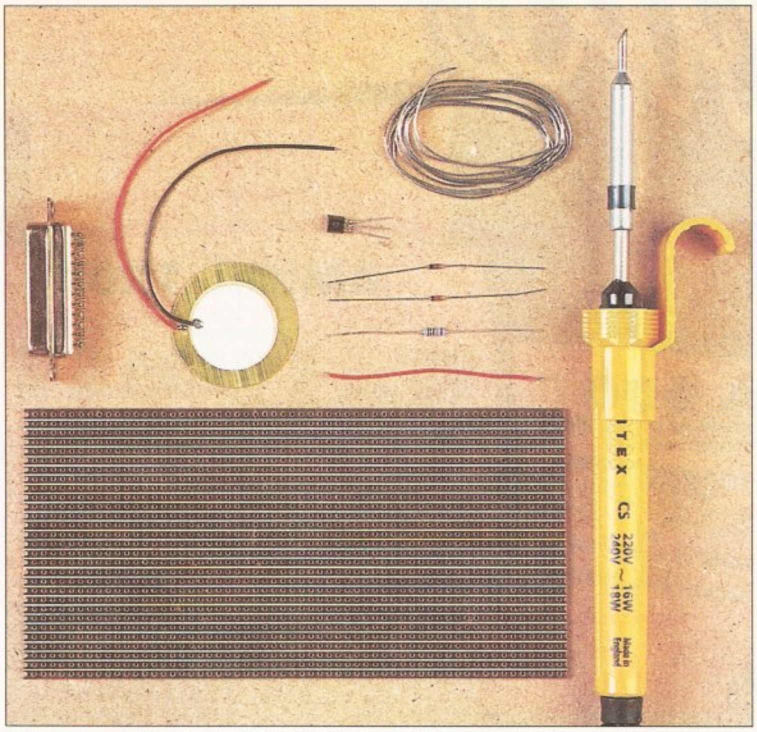
HOW TO CONSTRUCT THE CIRCUIT

As long as you have some experience of building circuits, this month's project should pose you no problems. There are one or two points you should pay some attention to, though. First, it's worth considering the order in which you go about assembling the circuit. You'll probably find that the simplest way to proceed is to start by assembling the components on the piece of Veroboard. The next step is then to solder four short lengths of wire to the appropriate tracks on the board. Finally, connect these wires to the correct pins on the 23-way socket.

Apart from the resistor, the other components must be assembled in the correct orientation. The diodes each have a line around them towards one end. You should mount the diodes so that the end with the line around is the end nearest to the transistor and resistor junction. These two diodes protect pins 15 and 16 – put the two diodes in the wrong way round and you'll short out those pins on the disk drive port. To identify which leg is which on the transistor, hold it so that the flat side – the one with the writing on it – is pointing towards you while the legs point down. The leg on the left is called the collector, the leg in the middle is the base, and the leg on the right is the emitter. In our circuit



Check that you know which leg is which on your transistor – put it in the wrong way and you'll blow it.

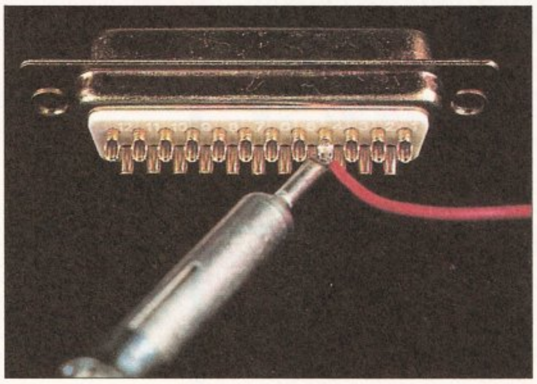


The components arrayed in all their glory, if not their packaging. We strongly suggest that you use an old piece of scrap wood or a workbench (of the real, not the Amiga, variety) to assemble the circuit on, not an antique table.

diagram we've used the standard symbol for a transistor and have also labelled the legs C, B and E. (See the two pictures on page 64.)

The piezo beeper also must be correctly orientated. It has two wires that are colour-coded. Attach the red wire – that's the positive one – to the track leading to the connection for pin 4.

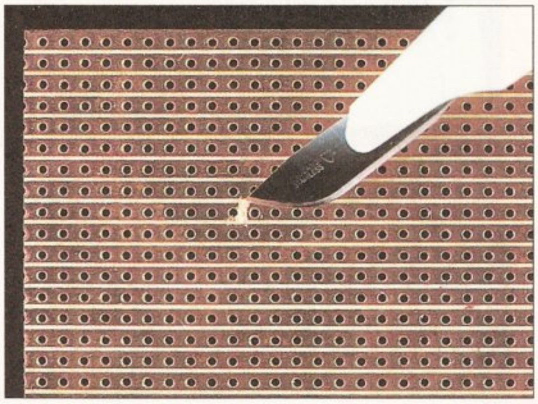
There are a few other points that you may wish to consider. You may find it convenient to fix the piezo beeper sounder to the board. An easy way to do this is with a small blob of Blu-Tac – a piece that measures 2mm or 3mm in diameter is ideal for this purpose. Use this to secure the sounder to the *non-conductive* side of the circuit board. The built circuit board illustrated is laid out on a relatively large piece of Veroboard – this is for clarity. If you're a neat worker you'll be able to fit the circuit on a smaller piece of board. The board can then be mounted in a small box or even, if space permits, inside an external drive.



Take care soldering the wires to the plug – it's easy to create a "solder bridge" between two pins.

CAUTION

If you are going to put the board inside a drive, then you won't need a 23-pin plug – simply solder the four wires from the board on to the appropriate pins on the connector inside the drive. Be sure that you know what you're doing if attempting this. It's easy to damage both the Amiga and the external drive by making a mistake.

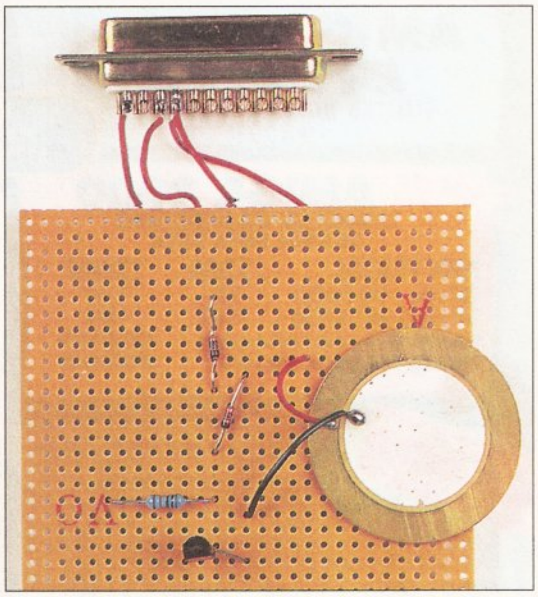


To break unwanted connections, cut at both sides with a sharp knife and peel off the conductive material.

CHECKING AND TESTING THE CIRCUIT

Before you connect the circuit to the Amiga's disk drive port it's very important that you make sure you have checked it over carefully. Ensure that all the components are correctly aligned and that there are no short circuits. If you've used too much solder when connecting the wires from the board to pins 15 and 16, then there's a chance that you may have "bridged the gap" between the two pins, thereby shorting them out.

Now for the acid test, plugging the board into the disk drive port. Remember that it's absolutely vital that you have turned your Amiga off *before* you do this, and take precautions against static. Next it's time to test the circuit. Our virus checker is constructed to sound the beeper whenever anything is written to the boot block on a disk – and we can test this by formatting a blank floppy. If you hear a satisfying beep from the board when you do this, great. The beeping means that you have your own fully-functioning virus detection circuit. AS



Your board should look something like this (maybe a bit neater). Check the orientation of the components, and be careful connecting it to your Amiga!

SHOPPING LIST

1 x BC557 transistor (QQ16S)	8p
1 x 100K resistor (M100K)	40p (for a packet of 10)
2 x 1N4148 diodes (QL80B)	4p each
1 x Piezo sounder (YU85G)	32p
1 x D-Type 23-way plug (JZ17T)	68p
1 x Veroboard (JP46A)	45p
Total cost of components	**£1.97**

(and nine resistors left over...)

You shouldn't encounter any problems in tracking down the bits required for this month's construction exercise. They're stock items in most electronic shops, and prices won't vary much. If you live in rural Aberdeenshire, you may find it more convenient to get them by mail order. Maplin and RS Components both provide efficient telephone mail order services – the code in brackets after each item is the Maplin catalogue reference and the prices are also from their catalogue.

• You can contact Maplin on ☎ 0702 554161 or RS Components on ☎ 0536 201201.

SEND US YOUR PROJECT

Want to be rich and famous? Well, there's not a lot that we can do about that, but if you send us your hardware project you could easily end up with your name in *Amiga Shopper*. What's more, if we publish your design you'll also end up with £25 in your pocket for putting yourself to the trouble. Please make sure that you send us an appropriate circuit diagram, a list of all the components and a brief explanation of what the circuit actually does. If you have a day-time phone number, then please include this as well. Whatever you do, *don't* send us a built circuit – we will be in touch with you if we need to get hold of this.

Write to:

Hardware project
Amiga Shopper
30 Monmouth Street
Bath BA1 2BW

There's no need to follow up with a phone call to check that we've got your design – we'll contact you if need be. And please allow us plenty of time to give all designs we receive a fair evaluation.

CALLERS WELCOME AT OUR BRANCHES OPEN 9-5.30, MONDAY TO SATURDAY, (10-4.30 SUNDAYS ST ALBANS ONLY)

WARNING

Due to the exchange rate , many items in this ad may increase in price - including some CBM + HP product.
At the time of going to press we are unable to confirm the extent or date of the increases, therefore, all prices must be confirmed by telephone before ordering.

Hobbyte

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10 MARKET PLACE ST ALBANS
HERTS AL3 5DG TEL: (0727) 856005/841396
THE GALLERY ARNDALE CENTRE LUTON
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HOW TO USE THIS AD

For the first time ever, you can choose your own Amiga and software combination, and still benefit from the huge savings only available from package deals.
Want an A500 with 1500 software? No problem!
Like an A1500 without games? It's up to you!

WE WANT TO BEAT ALL PRICES!

CALL US!!

OLD AMIGA TRADE-IN

The best trade-in allowance, extra for peripherals and accessories. Trade in your old machine for a brand new A600/ A1500/1200/3000/4000/CDTV or even PC.

A limited number of refurbished A500/1500/3000s are available, complete with 3 months warranty.

A500s FROM £149
A1500s FROM £249

A600 1MB	169	1500 HD+Controllers	
A600 20HD	(mint) 279	40MB	FROM 199
A3000s	FROM 699	120MB	FROM 379
CDTV	FROM 199	Action Replay	39
A590 20/40MB	129/159	XT B Board	79
Flicker Fixer 1500	79	AT B Board	149

OTHER ACCESSORIES - PLEASE ASK.

AMIGA 600

A600, SD & HD versions with 12 month on-site warranty, 1MB, WB 2.05, 3.5" FD + Smart Card Interface Mouse and Manuals

	ALONE
A600	189.99
A600 20MB HD	325.99
A600 40MB HD	379.99
A600 85MB*	469.99

2MB VERSION ADD £25

*Top quality 3rd party drives, install disc + full 12 months return to base warranty with **FREE** collection.

FREE PUBLISHER'S CHOICE RRP £99.99 inc.
Kindwords - WP, Pagesetter - DTP, Artists Choice - Art Pack, Headline Font Pack
OR
4 FREE 'Hot List' games, mouse mat + Joystick.
Limited - While Stocks Last

AMIGA 1200

FREE SLEEP WALKER + £10 DONATION TO COMIC RELIEF
(WHILE STOCKS LAST)

1200 2MB SD	369	1200 2MB +80MB HD	*575	**595
1200 2MB +20MB HD	*495	1200 2MB +120MB HD	*639	**675
1200 2MB +60MB HD	*535	1200 2MB +207MB HD	*POA	**895

SEE NEW AGA GG PACK BELOW

*1200 SD fitted with top quality 3rd party drives, install disc + full 12 months return to base warranty with **FREE** collection.

CBM APPROVED HARD DRIVES

1200s with hard drives marked ** include CBM approved drives fitted by CBM approved engineers, full legal installation/utility disc and documentation and come with CBM on-site warranty service.

Extra 4MB + clock fitted to above ....ADD £180

AMIGA 500+ £179.99

LIMITED NUMBER AVAILABLE - PHONE!

NEW CBM 1084ST
WITH TILT & SWIVEL STAND + LEADS
£179.99 WITH ANY COMPUTER

NO DEPOSIT CREDIT
available subject to status, APR 29.8%

CDTV

1MB, with Disc Caddy, Welcome CD + tutorial + remote control unit.

	ALONE	WITH MATCHING DRIVE KEYBOARD, MOUSE + WB 1.3
As above	£249*	£294**

With Megachip 1MB upgrade plus Super Agnus £157.99 extra

* Plus Hutchinsons Encyclopaedia + Lemmings **plus FredFish CD

See below/across for software packs

NEW PRICES

AMIGA 3000

TRADE IN AVAILABLE

12 MONTH ON-SITE MAINTENANCE
WITH FREE AMIGA VISION

NEW PRICES!	52MB	120MB
1MB video + 1MB Fast Ram	999	1149
2MB video + 4MB Fast Ram	1149	1299
With extra 4MB Fast RAM (fitted if required)		ADD £169.99
With Philips SVGA 28dpi inc. tilt & swivel		ADD £309.00

CD AMIGA CONSOLE

COMING SOON!

FIRST SHIPMENT AVAILABLE AUGUST

NEW 1940+1942 AGA MONITORS

1940 - dual sync, 14", 0.39mm dot pitch (approx 8833/1084 equivalent) with speakers, for 1200/4000 **£274**

1942- multisync, 14", 0.28mm dot pitch (approx 1960 equivalent) with speakers, for 1200/4000 **£374**

PHONE HOBBYTE FOR LATEST DETAILS

WITH ANY COMPUTER

ZOOL, STRIKER, PINBALL DREAMS & TRANSWRITE
OR LEMMINGS, SIMPSONS, CAPTAIN PLANET, DP III & GFA BAS

ADD £19.99

AMIGA 4000/30

WITH FREE DPAINT AGA OR WORDSWORTH AGA

NEW MID RANGE AGA AMIGA

AGA Chip Set + 68030 processor, 68882 25/50 MHz co-processor option, 256,000 colours from 16.6M, scan doubling for flicker free display, Mouse, Amiga 3.5"/1.76 MB 3.5" drive, Hard Drive as below, Amiga DOS 3.0 system and utilities, Gold Service on-site warranty

68030	68882	1 +1MB	2 + 2MB STANDARD VERSIONS	2 + 4MB SUPER EXPANDABLE VERSIONS
80MB HD	-	PHONE US BEFORE BUYING THIS CONFIGURATION We can supply at BEST PRICES, but note that most AGA programmes need MORE CHIP RAM	1079.99*	1179.99
80MB HD	25MHz		1199.99*	1299.99
120MB HD	-		1199.99*	1299.99
120MB HD	25MHz		1319.99*	1419.99
120MB HD	50MHz		1449.99*	1549.99
160MB HD	-		1279.99*	1379.99
240MB HD	-		1349.99*	1499.99

With CBM 1960 multi sync colour monitor inc tilt and swivel ....ADD £349
Per extra 2MB fitted to standard machine........................ADD £89
Per extra 4MB fitted to super exp. machine ....ADD £159

NEW PRICES
AMIGA 4000/40

New AGA Chip Set + blistering 68040 processor, 256,000 colours from 16.6M, scan doubling for flicker free display, 25 MHz, Mouse, Amiga 3.5"/1.76 MB 3.5" drive Plus Cross DOS for transfer of files between Amiga DOS +MS DOS, 2 rear + 2 front 3.5" bays, 1x 5.25" bay, Hard Drive as below, Amiga DOS 3.0 system and utilities, Gold Service Warranty

FULL 68040	ALONE	
120MB HD	2 + 4MB	£1989
120MB HD	2 + 8MB	£2139
160MB HD	2 + 8MB	£2219
240MB HD	2 + 8MB	£2289

With CBM 1960 multi sync colour monitor inc tilt and swivel ....ADD £349
Per extra 4MB fitted ....ADD £159

4000/40T INC. SCSI - COMIMG SOON!

THE HOTTEST LOT PACK

	VALUE/RRP
• All as Starter Pack	203.90
PLUS:	
• Another 10 GREAT individually packaged games, **BETTER THAN THE REST** previous RRPs up to 39.99 each, phone to choose from **HOT LIST**, or leave it to us! Children's games available.	269.82
• 80 Prog. Hobbyte PD Greats Pack II - Includes top games like Battlecars, Star Trek, Computer Conflict, Megaball, dozens of arcade classics, board classics and 'shoot-em-ups', DPaint clip art, Utilities, Word Processor, Spreadsheet, Database + Desktop Publisher and the ultimate virus killers - a must for every new Amiga owner!	39.99
TOTAL VALUE	513.71
WITH AMIGA	49.99
SEPARATELY	69.99
SPECIAL: ALSO 10 extra 'Hot List' games	ADD 25.00

NO OTHER DEALER CAN BEAT OUR CREDENTIALS

- Multi-million company with 9 years experience in Commodore product and here to stay
- Commodore trained staff are friendly and helpful and are parents, multimedia, educational, games, programming or technical specialists (usually more than one!)
- Open 9-6 pm Monday to Saturday and 10.00 am to 4.30 pm Sundays (St Albans only) for convenient shopping.
- Callers welcome for advice and demonstration at our 1600+ sq ft High St, Town Centre branches
- Same day despatch for most orders received by 5.30 pm; express am and Saturday services available
- Hardware carefully handled and delivered safely and reliably by caged, insured, top name courier service
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- Upgrade and trade in offers to keep you up to date
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- BFPO and export welcome

AGA GG PACK
(GRAPHICS + GAMES) FOR A1200, 4000 ETC.

	VALUE/RRP
• Personal Paint AGA - Top reviews, impressive DP IV clone with additional features inc. image processing, paints in any screen mode	69.99
• Your choice of - Zool (1200 only) or Sleepwalker or Trolls	34.99
• 5 'Hot List' games (AGA compatible) individually boxed	174.95
• Microswitched Joystick	9.99
• Mouse Mat + Dust Cover	9.98
• 10 Blank Discs + 80 capacity lockable disc box	16.98
• Virus Killer	4.99
TOTAL VALUE	321.87
WITH AMIGA/CDTV	89.99
SEPARATELY	109.99

WWW EXTRA PACK

	VALUE/RRP
• WWW games: Silly Putty	25.99
Formula 1 Grand Prix	25.99
Pushover	25.99
• DPaint III with animation	79.99
• 700 clip art pics/graphics for DPaint III	9.99
• 3 disc Home Pack incl. W Processor, Dbase, Spreadsheet	9.99
• Virus Killer	4.99
TOTAL VALUE	182.93
WITH AMIGA/CDTV	24.99
SEPARATELY	49.99

STARTER PACK

	MAX VALUE/RRP
• Microswitched Joystick	9.99
• 80 cap. lockable disc box **PLUS** 10 blank discs	16.98
• 4 great boxed games - See **HOT LIST** Phone for current choice **OR** DPaint III +700 Clip Art Pics/graphics	159.96
• Mouse Mat and Dust Cover	9.98
• 16 Days Free Hotel Accomodation in UK, Ireland or France - you pay only for meals	
TOTAL VALUE	196.91
WITH AMIGA/CDTV	19.99
SEPARATELY	29.99

EPIC PACK EXTRA

Needs 1MB and Hard Drive

	VALUE/RRP
• Epic Pack: Trivial Pursuit, language Lab, Amiga text	29.99
Epic, Rome, Myth	77.97
• DPaint III with animation	79.99
• 700 clip art pics/graphics for DPaint III	9.99
• 3 disc Home Pack incl. W Processor, Dbase, Spreadsheet	9.99
• Virus Killer	4.99
TOTAL VALUE	212.92
WITH AMIGA/CDTV	~~29.99~~ 14.99*
SEPARATELY	39.99

* SPECIAL THIS MONTH with Amiga CD/TV

NOT JUST ANOTHER MAIL ORDER COMPANY

For years a major player in Amiga Mail Order, Hobbyte also boast extensive expertise and experience in specification and support of multi-machine and specialist systems. Hobbyte have been recommended and trained by Commodore and successfully won major orders and support contracts from London Boroughs, MOD, educational establishments etc. We are pleased to be placed on tender lists.
This expertise is available to all our customers.

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• AMIGA SPECIALISTS • STAR GOLD DEALER • CDTV CENTRE • PHILIPS APPOINTED DEALE

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	VALUE/RRP
• Cartoon Classics Games: Lemmings OR Elf	25.99
The Simpsons Puzznic	24.99
Captain Planet Toki	25.99
• Deluxe Paint III with animation + 700 Clip Art pics	89.99
• Gold disc Office - WP + UK 'guess spelling' checker, spreadsheet, database, graphics + desktop publishing	169.99
• Edd the Duck OR GFA Basic OR Round the Bend	29.99
• Virus Killer Disk	4.99
• 80 Prog. Hobbyte PD Greats Pack - see 'Hottest Lot Pack'	39.99
• 4 disc DP pack inc. Fonts, Clip Art and Disc Tutor	9.99
• Hobbyte Primarary (specify) or Secondary Educational Pack	19.99
• 10 Blank Discs + 80 Capacity lockable disc box	26.98
• Mouse Mat + Dust Cover and Joystick	19.97
TOTAL VALUE	488.85
WITH AMIGA/CDTV	79.99
SEPARATELY	99.99

SPECIAL: Also with Citizen 200 24 PIN Colour Printer and Starter Pack ADD 199.00

NEW RELEASES + BEST BUYS

MICROVITEC CUB-SCAN 1440 MULTISYNC COLOUR MONITOR FOR 4000/1200

14", 0.28 dot pitch, scan horizontal 15-40 kHz, infinitely variable, with tilt + swivel stand, 3 year warranty **£429.99**

SUPRA 80MB HARD DRIVE UNIT FOR A500

Expandable to 8MB **£249.99**

CBM 386 + 486 BRIDGEBOARDS FOR 1500/4000 DOWN IN PRICE

386 Bridgeboard **£199.99**
486 Bridgeboard **£299.99**
with HD 144MB 3.5" PC drive .... **ADD £50.00**

1230/40MHZ/4MB 68882 CO-PRO FOR 1200

.... **£479.99**

TRAMPY'S, THOMAS'S OR NODDY'S PACK 2-8 YEARS

AT LEAST 57 EDUCATIONAL/FUN FILLED GAMES!

	MAX VALUE/RRP
• Thomas the Tank Engine's Fun with Words - 6 separate easy to use learning programmes with animation and sound.	29.99
OR Noddy's Playtime (to 7 years) - 8 magical learning games at 3 levels, PLUS Junior Art package inc. Colouring, electronic 'Fuzzy Felt', FREE Toy Town map, Keyboard overlay and wobbler.	
• The Shoe People - 6 colourful and entertaining games featuring Trampy and friends to encourage early number reading and pre-reading skills. With Shoe People music	
OR Fun School 2 (for 3-9 years - specify age)	9.99
• Fun School 3 or 4 - the "Fun School" suite have won just about every award going. 5 or 6 wonderful animated games.	24.99
OR Picture Book: 4 colourful and amusing games from ex 'Fun School' design manager will delight young children	
• Photon Paint II + 700 Clip Art pics inc. children, Fairytale +Legend characters, Sport, Cartoons, etc.	89.99
• Hobbyte Primary Educational PD Pack, containing 10 fun while you learn games	19.99
• Hobbyte 30 Easy Children's Games Pack	19.99
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TOTAL VALUE	221.90
WITH AMIGA/CDTV	59.99
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SPECIAL: Each extra title from first selection add just 18.99

LIMITED ZOOL + SCHOOL PACK

GCSE 11-15 YEARS

• Zool - Number 1 Chartbuster	25.99
• Striker - 94% CU Amiga	25.99
• Pinball Dreams - 94% AUI	25.99
• Transwrite UK WP +Spellchecker	49.99
• ADI French, Maths or English (11-15, specify age) - ADI the lovable extra terrestrial gifted teacher, guides you through National Curriculum. Ideally compliments school work. From the award winning Fun School team	25.99
OR ADI Junior (under 5's)	
OR 6 HOT LIST Games	209.94
• Hobbyte 80 Programme PD Greats Pack - 'See Hottest Lot'	39.99
• Hobbyte Secondary Educational Pack	19.99
• Microswitched quality joystick	9.99
TOTAL VALUE	407.87
WITH AMIGA/CDTV	49.99
SEPARATELY	69.99

THE HOT LIST

GREAT individually packaged games, **BETTER THAN THE REST** (previous RRPs up to 39.99 each)

CURRENT TITLES VARY - INCLUDES:

Paperboy II	Hunt for Red October
Colossus Chess	Blinky's Scary School (under 12)
Challenge Golf	Battleships
Neighbours	Licence to Kill- Bond Game
Frankenstein	Silkworm Helicopter jeep mission 93% CU
Edd the Duck (under12)	Continental Circus - 8 Int race circuits 92% AA
Spiderman/Cptn America	Xenon - C+VG Game of the Month
Thunderbirds	Blade Warrior - A Power, A Format, A Action superb reviews

+ LOTS MORE - AT LEAST 25 TITLES TO CHOOSE FROM!

AMIGA 24 BIT - £BEST!

A Video 24 with TV Paint for 500	588.90
DCTV	403.99
GVP IV + VIU-S	989.99
GVP IV + VIU-CT	1279.99
Harlequin 4000 24 bit card	POA
Image Master	105.99
Opal Vision 24 bit board + Opal Paint, Opal Presents , Karate 24 bit s/w	629.99
Video Processor for Opal Vision	POA
Video Suite for Opal Vision	POA
Retina 24 bit graphics card + 1MB + VD Paint	339.00
Retina 24 bit graphics card + 4MB + VD Paint	489.00
V lab 24 bit real time digitiser 1200/600 external	334.99
V lab 24 bit real time digitiser 1200/600 internal	289.99
V Lab 4000/3000 internal SVHS	334.99

FOR SPECIALIST ADVICE PHONE JP ON 0727 856005

ACCESSORIES

A500/600/1200 printer centre	28.99	A520 Modulator	29.99
A500/1200 control centre	34.90	Alien/Batman/T2 Joystick	10.99
A600 control centre	27.90	Bug Joystick	11.99
Brickette CDTV Joystick adapt.	44.95	CDTV Keyboard	54.99

FLOPPY DRIVES

Zydec 3.5 external drive, daisychain + on/off	43.95
Cumana CAX 354 3.5 external drive, beige	52.99
CDTV external 3.5 drive, black + 10 blank discs	49.99
PC 880B with anti click + Blitz back up and virus protector	59.99
PC 880B as above, Cyclone compatible	64.99
Dual drive as PC 880B	124.99
Replacement A500 drive	34.95
NEW!! High density 1.76MB ext. drive for any Amiga (WB 2)	POA
NEW!! A2015 high density int 1.76MB 3.5" drive for 1500/2000	78.95
NEW!! A3015 high density int 1.76MB 3.5" drive for 3000	78.95

MONITORS/ACCESSORIES

CBM 1084ST including tilt + swivel +2 games	188.95
Philips UK 8833 MKII mon.+leads+ Turbo Challenge + on-site	219.99
Tilt + swivel stand for 14" monitors	12.99
CBM 1960 High res monitor	359.99
NEW!! CBM High res AGA Quad synch Monitor for 1200/4000	POA
NEW!! Microvitec Cub-scan 1440 .28dp for 1200/4000	429.99
EIZO 9060M Multi-Sync for 1200/4000 models	595.00
CBM 1936 Hi-res SVGA .28dp inc. tilt & swivel	259.99
NEC 4FG Multi-Sync	544.99
NEW!! PiP View TV tuner + remote with sub picture for Amiga monitors	POA
CBM Flicker Fixer	99.90
ICD Flicker Free Video 2-A500	197.90

SCANNERS & DIGITISERS

Epson GT 6500, 600dpi 24 bit A4 inc. Scan s/w	779.00
Power Hand Scanner, 400 dpi, 64 Greyscale, Powerscan software	88.99
Power Hand Scanner as above, V3 for 1200/4000	104.99
Power Colour Hand Scanner	219.49
Sharp JX 100 A6 Scanner + scanlab s/w up to 18 bit	469.99
Summa Sketch II A4 Tablet Digitiser/A3 Tablet Digitiser	319.99/529.99

HARD DRIVES/ACCELERATORS 500/600/1200

A530 1MB 40MB	479.00
A530 1MB 80MB	579.00
A530 1MB 120MB	679.99
A530 1MB 213MB	749.99
A530 68882	218.99
GVP HD8 42MB	224.99
GVP HD8 80MB	324.99
GVP HD8 120MB	458.99
A590 20MB	199.99
A570 for 2.04 1MB 500	139.99
GVP 85 MB HD 600/1200	274.99
GVP 1230 030 accel for 1200	284.90
GVP 1230, 40MHz co-pro + 4MB RAM	469.99
M1230 XA 40MHz	289.99
M1230XA 40MHz 4MB	389.99
M1230 XA 50MHz 4MB	489.99
Microbotics VXL30 25MHz	219.99
VXL 30 40MHz	339.99
2MB Burst RAM for above	179.99

A600/1200 HD UPGRADES

	SELF FITTING* (on-site invalidated)	CBM APPROVED FITTING** (with on-site)
20MB	119	-
40MB	149	-
60MB	179	214
80/85MB	215	275
120/127MB	319	399
209MB	-	549
INTERNAL CLOCK		POA

*ADD £14.99 for Hobbyte fitting
**Including FREE courier collection & delivery

HARD DRIVES/ACCELERATORS A1500/2000/3000/4000

GVP HC8/II 40MB	278.99	G Force 030 40MHZ 4MB	684.99
GVP HC8/II 80MB	314.99	G Force 030 50MHZ 4MB	984.99
GVP HC8/II 120MB	358.99	G Force 040 33MHZ 4MB	1284.99
GVP HC8/II 213MB	566.99	Prog Mercury 040 28MHZ (3000)	1349.99
Extra 2MB fitted to any above	62.99	**NEW!!** SCSI II controller for 4000	139.99
G Force 030 25MHZ 1MB	384.99	Sysquest removable HD 88MB	658.99

EXPANSION

A500 512k Ram Exp+Clock	21.99	**NEW!!** PC1204 4MB exp- clock	184.99
A500+ 1MB exp	29.99	PC1204 4MB exp + 68881 20MHz	239.99
A500+ 2MB, exp. to 8MB	149.99	PC1204 4MB exp + 68882 25MHz	274.99
CBM A600 1MB exp + clock	37.99	PC1204 4MB exp + 68882 50MHz	244.99
A600/1200 2MB exp (card)	117.99	MBX 1200 4MB+68881 14MHz	268.49
A600/1200 4MB exp (card)	179.99	MBX 1200 4MB+68882 25MHz	334.49
CDTV 1MB exp + Super Agnus	157.99	MBX 1200 4MB+68882 50MHz	409.00
A500 Rom Sharer 1.3	37.95	8MB version MBX boards above	ADD 89.50
A500 Rom Sharer 2.04	38.95	**NEW!!** CBM 2.1 upgrade kit	74.99
A600 Rom Sharer + 1.3	49.95	A2065 Ethernet Card	229.95

Chip fitting and board upgrade available, by our qualified engineers .... POA

EMULATION

G Gate 386sx 25MHz	386.99	386 Bridgeboard	199.99
GVP 286 for GVPII +530	146.99	486 Bridgeboard	299.99
GVP 40/4 for 1500	945.99	AT Once	214.99

GENLOCKS/MODEMS

Rendale 8802 (1200 compat)	139.99	Video Pilot v330	1094.94
Rendale 8802 FMC	159.95	Rocgen+	131.50
Rendale 8802 SVHS/8860	469.99	GVP G-Lock	289.00
Hama Genlock S290	689.99	Supra 2400 Modem	78.95

DISCS

10 Blank DS/DD discs in box	4.99	50 Blank DS/DD discs	17.99
10 Blank DS/HD discs	6.99	50 Blank DS/HD discs	27.99

PRINTERS

2YR WARRANTY WITH CITIZEN

	ALONE	WITH STARTER PACK		ALONE	WITH STARTER PACK
Citizen 120+D	108.99	ADD £12.99	Citizen S24x col*	296.99	ADD £12.99
Star LC20	116.99		HP Deskjet 510	319.99	
NEW! Citizen 90 mono*	156.49		HP Deskjet 500 col§	439.99	
NEW! Citizen 90 colour*	169.49		HP Deskjet 550C§	639.99	
Star LC 100 9 pin col	158.69		HP Deskjet Portable§	339.99	
Citizen Swift 9* col	163.49		HP Paintjet§	639.99	
Star LC200 col	174.99		HP Deskjet 1200C	1349.90	
Star LC 24-20 II	218.49		BJ10sx Bubblejet port.	219.90	
Star LC 24-100 24 pin	173.49		BJ 200	349.90	
Star LC 24-200	209.99		BJ 330 A3	469.99	
Star LC 24-200 col	248.49		BJ 300	389.99	
Citizen 124D	176.99		Star SJ 48	198.99	
Epson LQ 100	189.99		Panasonic KXP 4410 Laser 5ppm	494.95	
Epson LQ 570	259.90		Star LS 5 laser	616.95	
Epson LQ 870	469.90		HP Laserjet 4L	619.90	
Epson LQ 1170	569.90		Star LS 5ex 5ppm dual bin	729.90	
Citizen S200 24*	179.99		Sharp JX 9500 9ppm	599.50	
Citizen S200 24 col*	194.99		QMS Ink Jet col A4	4999.95	
Citizen S240 24 col*	259.99				
Epson Stylus 800	294.90				

§Studio driver/Utility (WB 2 & above) highly recommended ADD £39.95

STARTER PACK: 500 Sheets A4 paper, Amiga to printer lead, Universal Printer Stand & Driver * with Print Manager

SOFTWARE

GRAPHICS/CAD

Aladin 4D	213.99
AmigaVision	17.90
Art Expression AGA	134.90
Art Dept. Pro 2.3A	147.90
Brilliance	143.90
Caligari 24	234.49
Deluxe Paint IV	53.99
Deluxe Paint AGA	64.90
Distant Suns	49.49
Essence	39.50
Expert Draw	48.99
Gallery	39.49
Image FX	179.99
Imagine v2	109.49
Image Master AGA	119.49
IntroCAD Plus	63.99
Pixel 3D Pro	119.95
Prodraw 4 AGA	POA
ProVista AGA	49.49
Real 3D Classic	78.90
Scala 500 HVT	64.49
Scala Pro 1.13	173.50
Scala MM200	434.99
Sculpt Anim.4D	198.99
Spectra Colour	57.99
Take 2	36.90
TV Paint	544.90
Vista Pro	49.99
X CAD 2000	89.50
X CAD 3000	245.99

VIDEO PROD/ TITLING

Adorage	59.49
AmigaVision	17.90
Broadcast Titler II	173.90
Deluxe Photolab	51.49
Morph+	138.99
Pro Video Plus	137.99
Scroller	59.99
TV Show Pro	51.39
TV Text Pro	79.50
Video Studio 3	115.95
Video Director	123.99
Video Master	49.49
Vidi Amiga 12	73.99

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AMOS Action

Jason Holborn offers a mouth-watering guide to producing attractive Intuition-style menus, then some pointers on how to get your AMOS creations published and make money...

We're getting back to basics again this month. This new-fangled AMOS Pro business is all very well, but let's face it, most of us are still using bog-standard AMOS – and damned fine it is, too.

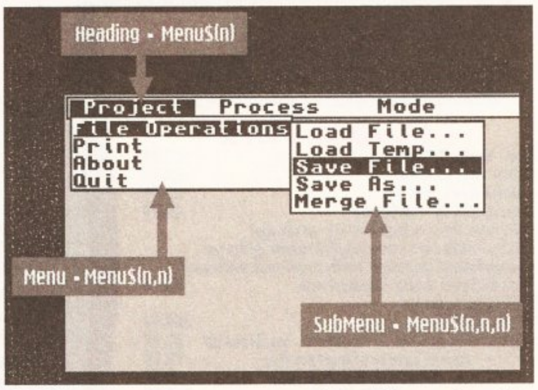
It's about time we took a look at a very powerful aspect of AMOS – the Menu command, which enables you to add Intuition-like pull-down menus to any AMOS screen.

Although AMOS's pull-down menus are very similar to those of Intuition, they're created entirely by AMOS and can be attached to any screen opened under AMOS. In many ways, AMOS's pull-down menus are more powerful than those offered by Intuition. One thing's for sure: adding pull-down menus to an AMOS program is considerably easier than adding pull-down menus to a program through Intuition. You simply define an array containing the menu's elements (the items that you can select within the menu), and then a single command is all that is needed to get the menu up and running. Let's start then by taking a look at that array.

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

AMOS menus are defined by putting strings into an array called **menu$**, a reserved variable that AMOS always uses to hold menu definitions. Because **menu$** is a reserved variable, you don't have to dimension it (using the AMOS **Dim** command) like other arrays – this is automatically done for you. Defining the menu array isn't just a case of reading in strings held within data statements and then sticking them into the array using a loop. Because the menu array has a very definite structure, placing a string in the wrong place within the array will cause it to appear in the wrong place once the menu has been attached.

To create a menu, you must first define its heading by placing a string into **menu$(1)**. This is the first element within the menu array and the **1** is used as a pointer to that first menu heading. So, for example, placing a string such as "System" into **menu$(1)** would create a menu with a heading of **System**. Further menus can be created simply by incrementing the value held within the brackets – **menu$(2)**, **menu$(3)** and so on. Once the menu headings have been defined, you can then start to put elements into them. This is done by extending the menu array so that not only is the menu number defined, but the element number too. For example, **menu$(2,1)** would point to the first menu option under the second menu heading.



AMOS's powerful menu commands enable you to add impressive-looking Intuition-like pull-down menus to any program, complete with nested sub-menus.

Like Intuition, AMOS enables us to attach sub-menus to any of the menu elements that we define. You could, for example, have a menu element called "File Operations" that (when the user moved the mouse pointer over the option) caused a further menu to drop down containing a number of file-orientated operations (load file, save file and merge, for example). This is done by further extending the menu array with a submenu parameter – **menu$(1,2,3)** would point to the third element of a sub-menu attached to the second element under the first menu heading. Got it?

Once you've defined your menu, you can set it running simply by issuing the AMOS **Menu On** command. This command doesn't expect any parameters to be passed to it because it assumes that you've placed your menu definitions into the **menu$()** array. If AMOS manages to find any errors in your menu definition (you've tried to attach a sub-menu to a menu item that doesn't exist, for example), it will refuse to create your pull-down menus and an error message will be produced.

MAKING MENUS WORK

Now that you've created your pull-down menus, all that remains is to make use of them within your program. Unlike some multimedia systems, AMOS doesn't automatically handle the task of performing the functions that you've tied to your menus. For example, if you wanted to jump to the routine that pulls in a data file when the user selects "Load File...", it's up to you to do all the dirty work. All that AMOS will do is to tell you when a particular menu item has been selected. As with the AMOS Interface language that we covered last month, it's up to you to actually do something once the selection has been made.

AMOS provides us with a function called **Choice** that is used to return the status of your pull-down menus. At its simplest level, the **Choice** function tells you whether a menu item has been selected. All you would have to do is to read the value returned by the **Choice** function using a line such as "`If Choice = 1 Then....`". If the user hasn't selected a menu option since the last time you checked your menus, the **Choice** function will return a value of 0. If, on the other hand, a menu item has been selected, then a value of 1 will be returned. If this is the case you can then interrogate the **Choice** function further to find out just what menu item was selected.

To do this, the **Choice** function is capable of returning several different values. You can retrieve these values by appending a set of closed brackets containing a single parameter that tells the **Choice** function which aspect of the selection you're interested in. Reading the value returned by **Choice(1)** would tell you under what menu heading the selected item lives and **Choice(2)** would tell you the exact menu item. It's important to check both of these values – just reading **Choice(2)** will give you the

LISTING 1

```
' *** AMOS Pull Down Menus Demo ***
Screen Open 0,640,256,8,Hires
Flash Off : Pen 2 : Paper 0 : Cls 0
Menu$(1)=" Amiga Shopper "
Menu$(1,1)="Contents"
Menu$(1,1,1)="AMOS Column"
Menu$(1,1,2)="ARexx Column"
Menu$(1,1,3)="Desktop Video"
Menu$(1,1,4)="Desktop Publishing"
Menu$(1,1,5)="And so much more..."
Menu$(1,2)="Editor"
Menu$(1,2,1)="Cliff Ramshaw"
Menu$(2)=" AMOS "
Menu$(2,1)="AMOS Professional"
Menu$(2,1,1)="AMOS Pro Compiler"
Menu$(2,1,2)="Intuition Extension"
Menu$(2,2)="Easy AMOS"
Menu$(2,3)="AMOS 1.35"
Menu$(2,3,1)="AMOS Compiler"
Menu$(2,3,2)="AMOS 3D"
Menu$(3)=" Quit "
Menu$(3,1)="Yes Please!"
Menu On : Rem *** Turn menus on
Repeat
   If Choice
      Print "MENU = ";Choice(1);
      Print " MENU ITEM = ";Choice(2);
      Print " SUB MENU = ";Choice(3)
   End If
Until Choice(1)=3 and Choice(2)=1
Print "You selected Quit!"
End
```

menu item number, but it doesn't tell you which menu heading the item lives under. This doesn't really matter if you create just one menu heading, but life can get very confusing if several are created. (The **Choice(2)** function will return the same value for the same menu items under different menu headings.) In the same way as for menu elements, if you have a sub-menu appended to one of your elements you can use **Choice(3)** to find out which element of the sub-menu was selected.

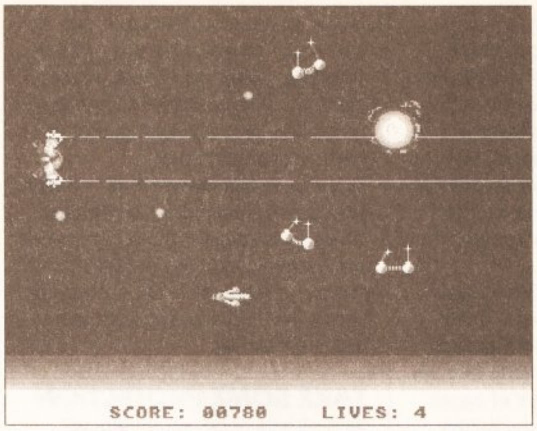
Anyway, enough of the theory, have a look at Listing 1 for a demo, which you can type in, run and experiment with, that demonstrates AMOS's powerful pull-down menus facility in action.

THE HARD SELL

Making money from your programming skills needn't be just a dream. Jason Holborn gives some handy tips on getting your programs published.

Most of us bought AMOS to launch us on the way to programming fame and, we hoped, a little fortune. While sending the odd listing into *Amiga Shopper* will undoubtedly get you the former, even we won't pretend that you'll make a fortune from getting your listings printed in the magazine.

Quite a few readers have written to me in the past enquiring about the best way to get AMOS programs published commercially. As many AMOS users have discovered, most software houses still hold a very dim view of anything written in BASIC. Even if you were to write the ultimate arcade game, the chances are that most of the software houses would reject it without even viewing it properly as soon as they realised that the game was written in BASIC. Software houses are particularly keen to distance themselves from programs written using so-called "game creators" too, so getting an AMOS program published is no simple feat.



Could your AMOS game make it onto the shelves of WH Smith? The test is, will it make it off the shelves?

FACING UP TO REALITY

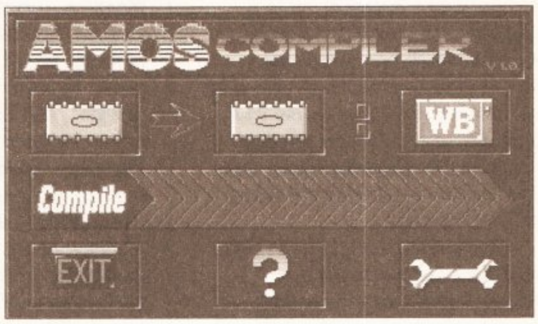
So if you're inspired by this month's cover feature on making money with your Amiga (see page 14), how do you go about getting an AMOS program published? Well, the first thing is to take a step backwards and ask yourself if the program genuinely is of commercial quality. Better still, get a couple of your friends to take a look at the program for you and take note of any suggestions that they make. If, for example, they say that the graphics are a bit naff or the soundtrack is annoying, then do something about it. The quality of gameplay is vital too – if your friends find the controls frustrating or the screen update too slow, don't go into a sulk and storm out of the room mumbling something along the lines of how they couldn't do any better.

Quite a few "serious" programs have been written in AMOS, but I'm afraid that, even if they are up and beyond the quality of current commercial equivalents, many software houses won't touch AMOS applications. The simple fact of the matter is that serious users like their software to run under Intuition, so until Europress launch the fabled AMOS Professional Intuition extension, commercial applications written in AMOS are definitely out.

The only exception to this rule is educational software – indeed, *most* educational titles released these days are written in AMOS!

Another good idea is to take a look at the products currently out there in the marketplace. If you've just written a game that has already been done a hundred times before, then it's going to have to offer something pretty dramatic if people are going to shell out their hard earned cash. I'm not just talking about pretty graphics – where non-original games ideas are concerned, we've got to be talking major amounts of playability and addictiveness that will make game players (even those that might already have a game of the same type) buy your version.

One of the areas that lets AMOS games down the most is that of graphic and audio presentation. But although you should try to make your game's graphics and soundtrack as attractive as possible, don't worry too much if your game isn't up to the same visual and aural standards as a commercial release. What you must consider is that software houses employ staff specifically for the task of designing game graphics and writing soundtracks. These people spend their entire lives sat in front of either *DPaint* or *SoundTracker*. If a software house decides to market your game, it will probably suggest that one of its graphic artists or musicians provides you with some new graphics or sound.



Running your code through the AMOS compiler not only delivers an extra spurt of speed but can also hide your program's origins, making it more marketable.

MAKING YOUR MOVE

Once your game is in a form that is suitable for submission, make a final check for bugs. What you must consider is that the Software Manager (the guy who will check out your program) is regularly sent piles of submissions, all of which he must check through. If your program crashes after little more than a few minutes, he's unlikely to want to wait while it reloads.

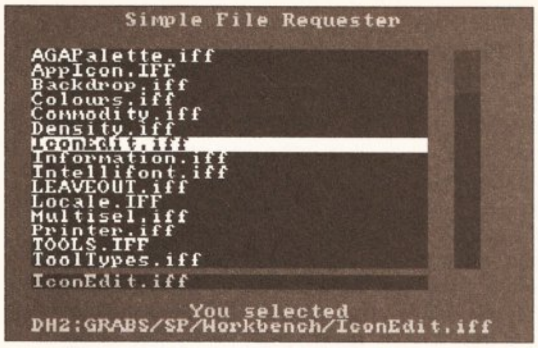
Debugging a program before it is submitted is somewhat different to the sort of debugging you'd usually do. Put yourself in the position of

MENU DESIGN MADE EASY

The best way to build up the menu array is to sit down and work out exactly how you want your menus to be structured before committing yourself to code. Say you wanted to define two headings, each of which used sub-menus. Instead of simply sitting down in front of AMOS and coding away, you would save yourself a lot of time if you sketched out the structure of the menus using something like the following (only one menu heading is shown but I'm sure you'll get the general idea).

Once you've got your menu sketched out on paper, it's simple enough to transform it into AMOS source code. The best way to do this is to start from the top and work down, fleshing out the menu array by working out the position of each element according to the table you've drawn. This isn't a difficult exercise if you simply work methodically down your list, but just to illustrate – as if by magic, here's the AMOS menu array definitions required for the above example:

Heading	Menu Element	Sub Menu Element	
			`Rem *** Menu Definitions ***`
Project			`Menu$(1) = "Project"`
	File Operations		`Menu$(1,1) = "File Operations"`
		Load File....	`Menu$(1,1,1) = "Load File...."`
		Load Temp....	`Menu$(1,1,2) = "Load Temp...."`
		Save File....	`Menu$(1,1,3) = "Save File...."`
		Save As....	`Menu$(1,1,4) = "Save As...."`
		Merge File....	`Menu$(1,1,5) = "Merge File...."`
	Print		`Menu$(1,2) = "Print"`
	About		`Menu$(1,3) = "About"`
		This Program	`Menu$(1,3,1) = "This Program"`
		Current Project	`Menu$(1,3,2) = "Current Project"`
	Quit		`Menu$(1,4) = "Quit"`



Try to avoid using the standard AMOS file requester within your programs – why not use an adaptation of the one published in last month's issue instead?

someone who knows absolutely nothing about computers, let alone your program. Better still, grab someone whom you consider to be totally brain dead (and no, I'm not available for this sort of thing!) and stick them down in front of your program. It's all too easy for someone who is very close to a programming project to miss what would seem to be a blindingly obvious bug to an outsider. Because you already know how to use your program, you're unlikely to start doing things with the program that you shouldn't – striking the wrong key, for instance.

Documentation is also another important factor to consider. Although your game may seem logical enough to you, the Software Manager who will be testing your program doesn't want to have to work out how to play the game for himself. Don't go totally overboard here – the Software Manager doesn't want to know why a lone spaceship from the outer galaxies is attacking a race of green slimy space pirates.

And don't write too much – if the Software Manager has to wade through hundreds of pages of documentation just to find out how to load your program, I can guarantee you that your game won't even get near an Amiga disk drive! Just a page or two is more than enough and it should contain the following items:

Program Title – the name of your program

Machine – what type of machine it runs on. Don't write down every type of Amiga under the sun (A500, A600, A600HD etc) – just write "Amiga". And then make sure it *does* run on all the common Amigas.

Memory – the minimum amount of memory required to run the program.

Description – all the Software Manager needs is a very brief description of the game. Include such facts as the game type (shoot-'em-up, 3D dungeon exploration game or whatever), a description of how the game is played and the structure of the game (how many levels it has, any extra power-ups the player can collect, that sort of thing).

Controls – what controls does the game use? If the game is keyboard-controlled, give a full list of all the keys, logically laid out.

Loading Instructions – always make your game auto-booting so that the Software Manager can simply turn on his Amiga, insert the game disk and the game will load. If any setting up is required, document it concisely but in full detail.

TAKE SOME PROTECTION

With all this done, you're almost ready to send your game off. Before you do so, however, protect yourself by posting off a copy of the game to yourself, and when it arrives *do not open it*. The postmark can be used to prove when the game was written and you should therefore place it in the hands of either a solicitor or (cheaper still) take it along to your bank and ask them to hold on to it. Either way, you'll be asked to pay a retaining fee but this is well worth paying if – in the unlikely event you are ripped off – you have to prove that the game (or, in the case of original games, the game idea) was yours. Always keep copies of all letters that you send to a software house and, when you finally do send off your game, use recorded delivery.

So how do you get your game noticed? Well, one of the most common methods used in the music industry is to send in a tape that is brightly coloured. This works equally well in the computer industry too. Most people send in boring blue or black disks, so sending in a disk that is brightly coloured (red, green and yellow disks are available) will make yours stand out from the rest.

Finally, you need to establish what software houses would be best suited to market your particular game. If, for example, you've written an arcade game, there's little point in trying to sell your game to a company that specialises in strategy games. Always go for a software house that has a proven track record in marketing the same type of game as the one that you have written. Address your game to the "Software Manager" and then sit back and wait. Don't keep hassling a software house if you haven't received a reply from them within a month – because of the large number of disks that they receive, they're unlikely to find time to look at your disk within the first couple of weeks.

Feel free to send your game to several publishers, but don't tell them that other rival publishers have also received a copy. If several companies express an interest, then you can tell them about their rivals. If they are genuinely interested in your game, they'll be happy to compete for it. Don't push your luck though – as they say, a bird in the hand is worth more than two in the bush. AS

PRO UPDATED (AGAIN!)



After the news that Europress had updated AMOS Professional to version 1.11, I've recently heard that yet another update has been released to take it up to version 1.12. According to my sources, version 1.11 of AMOS Pro locked up on some systems, so Europress had to hurriedly get AMOS Pro 1.12 out on to the PD circuit. As always, the latest updater disks can be purchased from all good PD libraries.

AMOS IN DISGUISE

If you're still totally convinced that your game is the best thing since sliced bread, the next thing that you absolutely must do is to disguise the fact that it was written in AMOS. We're all proud to be AMOS coders, sure, but software houses don't give a hoot about such banner-waving, so save it for your fellow AMOS coders. The first thing you should do is never (and I repeat *never*) send your game in as nothing more than just source code and expect the software house to own a copy of AMOS.

Before you even think about submitting a game, you should always compile it. Even if you don't own the AMOS Compiler, hold on to your game until you've saved up enough cash to buy a copy. Not only will your game be far more professional (it will run from any disk without the need for a run-time system), but it will probably benefit from the extra spurt of speed. Here's a couple of extra tips worth considering.

- Although Europress would like you to advertise the fact that you used AMOS to produce your game, you're not bound to do so by any legal obligation. Europress did originally insist that the AMOS logo was included on the title screens of all AMOS-produced software, but after realising the difficulties that AMOS users were encountering when trying to sell software, they modified these obligation a bit.

All you have to do is to inform Europress (preferably in writing – mark your letters for the attention of Chris Payne) that you've written an AMOS game that will be sold commercially. (Note that this letter should only be sent after your game has been accepted!) Chris and the rest of the Europress marketing team will keep this fact a secret for two months after your game has been released. After the two months have expired though, they'll have the right to advertise the fact as much as they like.

Don't worry about the software house getting miffed – if they've made bags of money out of your game, they'll be too busy counting money to worry! If the game is a flop though, chances are that Chris won't say a thing anyway.

- It may be very handy for your own programs, but never use the AMOS file requester within your game – it's a dead giveaway. Have a look at *Amiga Shopper* 25–27 for details on how to write your own in AMOS Pro. (You'll find back issues information on page 116).
- Another way of giving the game away (if you'll pardon the pun) is to stick with the standard AMOS mouse pointer. To turn it into something less distinctive, simply load the file **mouse.abk** (you'll find it in your AMOS System folder) into the AMOS Sprite Editor and edit its shape.
- Use permanent memory banks as much as possible. There's nothing naffer than having all your graphics and sounds held on disk as separate files. AMOS insists that pictures are stored in standard IFF format, so any Tom, Dick or Harry will be able to load your pictures.

NEXT MONTH

We'll be starting work on a major applications program – a paint package. With the supreme control AMOS offers you over the Amiga's graphics, it's an excellent language to use for such a task. Next issue sees the start of a step-by-step guide to creating a fully-working package to rival the mighty *Deluxe Paint*.

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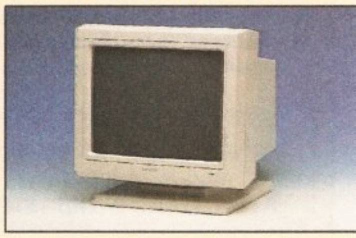


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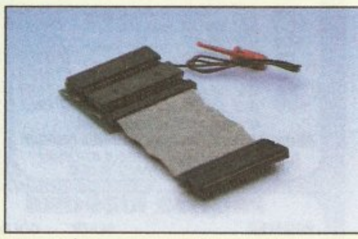
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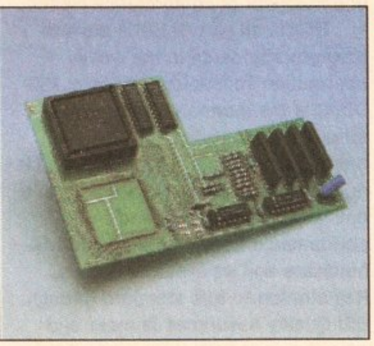
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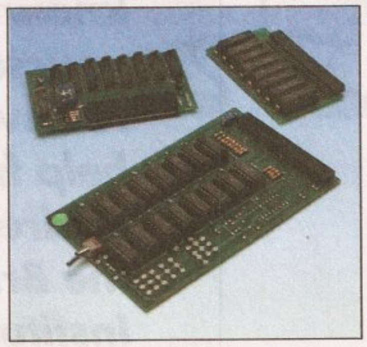
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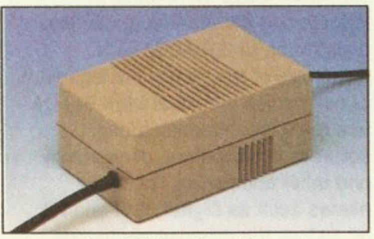
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- British made

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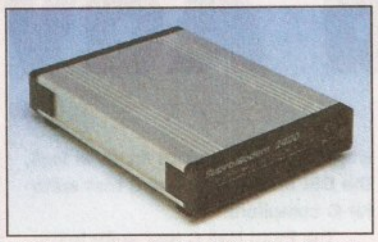
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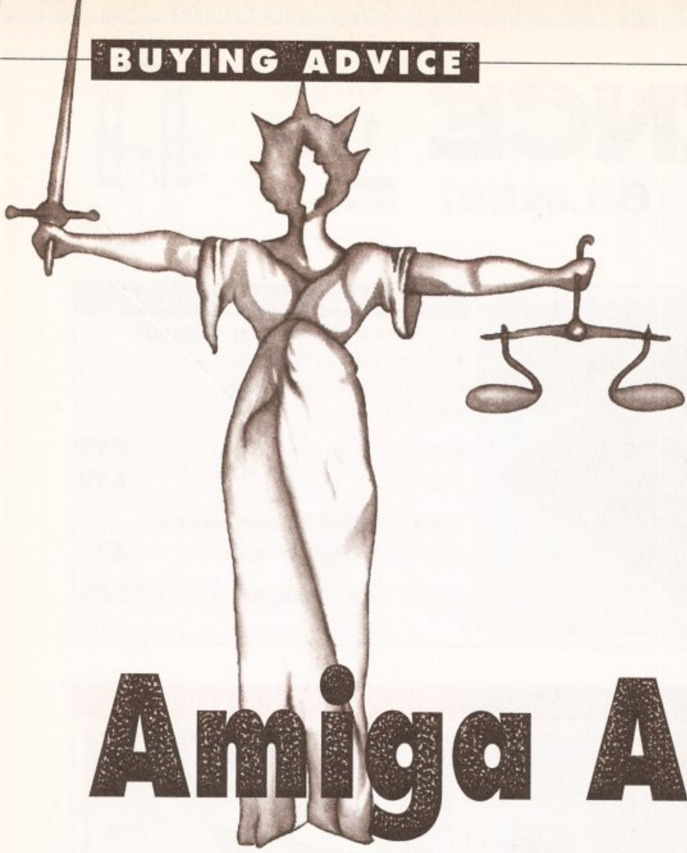
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Unsure of your rights when you go Amiga Shopping? Want to know how to protect yourself? Alex Soboslay reviews the law with help from Wilf Rees, Andrew Charlton and the British Standards Institute, no less.

Amiga Advocate

Where's the kitemark, we wanted to know. In *Amiga Shopper* 25 we mentioned that the American National Standards Institute (ANSI) had set a standard for the C programming language which most C compilers in the world now adhere to. We said that the British Standards Institute hadn't yet worked out a standard for C. In fact, the BSI have developed a test suite for C compilers.

The Plum Hall C test suite tests every "shall" and "shall not" constraint and every syntax rule. It consists of 22,000 lines of C code, plus over a million bytes of script-generated C to provide a comprehensive test for any compiler. To help C developers with portability problems, BSI offer a model C compiler which verifies source code against the C standard and includes run-time checking, warnings where code may cause portability problems, and a system of error messages that refer you to the appropriate part of the standard. In addition to Prolog and other test suites, BSI Quality Assurance also have a Pascal validation suite (developed by NPL) which has been in use for ten years and is the internationally recognised test for checking conformity to the ISO standard for Pascal. BSI's *CERT*ware logo is displayed on validated products as an endorsement of conformance claims.

This is all part of BSI's push to promote standards in the whole Information Technology (IT) field. ISO 9000 is the international standard for software systems "quality management" and IT generally, and it is designed to assure customers of a defined level of quality and performance from both a company's hardware and its systems setups. Registration to this standard through BSI Quality Assurance is more and more being specified as a mandatory requirement for companies tendering for finance and central government contracts. Large companies in industry too are starting to demand registration to ISO 9000 as a guarantee of the quality management of companies they deal with. BSI QA has registered manufacturing, software development, consultancy and other companies, including names such as Digital, IBM and ICL, as well as the in-house computing operations of such familiar names as British Steel Central Management Services and British Telecom. IBM (UK) Ltd has full company-wide registration to ISO 9000 – which means that all functions within the business, from caterers to the chief

YOUR QUESTIONS ANSWERED

SECOND OPINION

In *Amiga Shopper* 26 we published a query from Mr Raphuit, who had bought a second-hand Amiga for £150 from a second-hand shop. When he got the Amiga home, it worked for about four hours before it began crashing repeatedly and then stopped working altogether. When he took the machine back to the shop, they drew his attention to a sign saying "Goods bought as seen" and claimed that they accepted no responsibility, adding that he must have mistreated the machine himself.

Our legal expert's advice was equivocal. On the one hand, the Sale of Goods Act specifies that all goods sold must be "of merchantable quality" and "fit for the purpose" for which they are sold, and the Unfair Contract Terms Act adds that a seller cannot exclude or vary these requirements by any such sign. On the other hand, our legal expert said, an arbitrator may feel that because the Amiga was working when it left the shop, it was in a condition good enough to be described as "merchantable", considering its price; and what's more, if the defects were such as Mr Raphuit could or should have noticed before he bought the machine (especially if the "bought as seen" sign was in plain view and he knew that those were the conditions under which he was buying), the arbitrator may conclude that he accepted the machine in that condition, with all its defects. The decision, we concluded, might go either way.

Kevin Walsh, a solicitor from Strathclyde, writes to disagree. "On the basis of all the facts narrated," he says, "Mr Raphuit would have a cast-iron case against the trader for a full refund, since a notice such as 'Goods bought as seen' has little significance in law, unless referring to obvious damage, such as a damaged casing for instance.

"Cases upon this point are numerous, and courts are eager to imply durability into consumer sales. Take as an example a man who purchased an eight-year-old Jaguar for £390. Three weeks later it broke down. In court, the buyer was successful in establishing that the car was not fit for its purpose at the time of sale. From this you can extrapolate that a £150 computer will be expected to last for longer than four hours. Mr Raphuit should contact the Trading Standards department in whose area the shop lies, and they will probably persuade the shop to issue a refund. Failing that, he should see a solicitor as soon as possible."

GONE FOR BROKE

A number of readers have written following the collapse of Future World Computers Ltd, also trading as Dynamite Computers. (We reported on this back in *Amiga Shopper* 24.) Many of Future World's customers had sent money for orders that had not been delivered at the time that the company went into liquidation, and they're now wondering if there is anything they can do to get their money back.

Unfortunately, when a company goes bust, customers are generally classified simply as "unsecured creditors". This means that they take their place in the queue, behind the tax man, the VAT inspectors, and "secured creditors" (which usually means bodies like banks and building societies that lend money in return for first claim on certain property, like a mortgage on a house – if you don't keep up the payments on the mortgage, the building society get the house and can sell it to get their money back, no matter who else might be after you for money). Unsecured creditors also include everybody the company owed money to, whether for stock the company had bought or for less material things like advertising. (Future Publishing, publishers of *Amiga Shopper*, were also owed a substantial amount by Future World, but they're in exactly the same boat as customers with outstanding orders.) If a company could afford to pay all its debts, it wouldn't be going bust in the first place, so even if all of its assets and stock are sold off,

exec, have been assessed against the standard.

BSI QA runs a complementary accreditation scheme called TickIT especially for software developers. Software houses, consultancies and large IT organisations have signed up, including Admiral plc (developers of software for Nationwide Building Society) and Andersen Consulting.

What about applications programs? BSI has developed a series of Kitemark schemes for software, laying down product specifications developed in conjunction with developers, representative industry organisations and user groups. A software Kitemark will guarantee buyers that any package meets a standard level of functionality and is stable and well-tested, and also provide suppliers with a guide to the minimum level of functionality their product should meet. The first of these Kitemarks covers accounting software and requires suppliers to:

- operate a quality system to ISO 9001;
- conform to relevant product approval specifications; and
- document the software in accordance with established standards.

What's more, suppliers must agree to devise tests for all user-reported bugs and ensure that new versions of the software have eliminated these before being released, and they must not release new versions bearing the Kitemark until all outstanding faults have been resolved.

The first Kitemark licence for accounting software is likely to be awarded this year, and BSI are working on extending the scheme to payroll packages, electronic data interchange, data security and open systems products. There are plans to begin work on Kitemark schemes for applications software, but these are still a little way off in the future. So when you buy some new software you can't quite yet have a guarantee of exactly how it will perform – but at least you can be reasonably confident that BT's computer systems are up to scratch.

• Thanks to BSI Quality Assurance (☎ 0908 220908) for their information.

ON THE RECORD

In previous instalments of Amiga Advocate, we have mentioned that even if you take action in the County Court under its small claims procedure (as detailed in *Amiga Shopper* 25) and win your case in court, that may not be the end of the story – you might still have to get the losing party (who is now known as a "judgment debtor") to pay up. If you are able to get a judgment but are having a spot of bother getting your cash, then a point always worth making to your debtor is that County Court judgments are now automatically registered (in the Register of County Court Judgments, as it happens). So what? Well, if the debt is paid within 28 days of judgment, then the registration is deleted, but if it is unpaid after that time it will remain on the register for six years after payment – it will be marked "satisfied" when finally paid, but not removed, so it sits there as a matter of public record. These days, credit checks carried out by potential suppliers will show that the debtor is a bad payer, and it may be that his creditworthiness will be adversely affected. In fact, if your debtor is an individual, it may have more serious ramifications: it could stop an individual opening a bank account, getting a mortgage, buying a car or getting a credit agreement.

Be wary, though, of harrassing someone who owes you money, even if it's a "judgment debt". It is a criminal offence to do so, whether it is by threatening violence or just publicity or criminal proceedings, or by causing distress, alarm or humiliation to the debtor or the debtor's family. In one case, a newsagent who was owed money parked his van outside the debtor's home with a sign on the side saying "Debt Collector" – a great joke, you may think, but the courts did not agree. The newsagent was charged and had to pay a fine of £2,000 – more than the debt he was owed! It is always safer to leave it to the court to enforce its judgment and collect the money for you. AS

USEFUL CONTACTS

Check the telephone book for how to contact your nearest:

- Citizen's Advice Bureau
- Trading Standards Office (look under your local council)
- Office of Fair Trading
- County Court (ask about the "small claims procedure").

Please note: if you are involved in a dispute of any kind, always try to resolve the matter with the dealer or supplier first in an amicable way. If that doesn't work, seek independent advice from the contacts above or from a solicitor. Amiga Advocate is intended only as a guide to the law in England and Wales, and you should not rely solely on anything said here. We cannot give direct advice on individual cases, act as arbitrators in any dispute, or reply personally to any correspondence.

it's very unlikely that there will be enough money to pay everybody in full. More likely, all the unsecured creditors will get only a fraction of the money they're owed.

So, not much consolation if you'd sent money to Future World. But what can you do to protect yourself when buying by mail?

❶ **Trusts.** The general rule that customers are unsecured creditors doesn't apply if the money involved is held "in trust" by the trader. This can arise if the trader holds all deposits in a separate bank account, which a court might regard as a trust account, though this is not very common. It can also arise if you specify when you send a payment that the money is to be held in trust until the order is completed. If you can prove this – say, if you can get the cheque returned by the trader's bank and show you had written this on the back – then you are entitled to your money back in full. However, this is true only if the trader still has the money at the date of liquidation (or bankruptcy if the trader is an individual). The money legally *should not* have been spent, but if it is gone you're no better off than before, so even this is not likely to help here.

❷ **COD.** You could enquire before you order whether you can buy Cash-on-Delivery. Many traders won't even consider this because they have to wait (up to 28 days) for their money after sending the goods (rather than the other way around!), and you will almost certainly have to pay the fee yourself, but that's only £2 on top of the invoice cost and at least you don't have to pay until the goods actually arrive. Note that Royal Mail's Parcelforce offers the facility only up to a maximum invoice value of £500.

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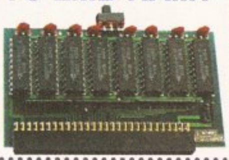
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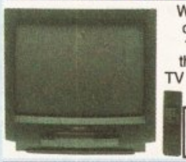


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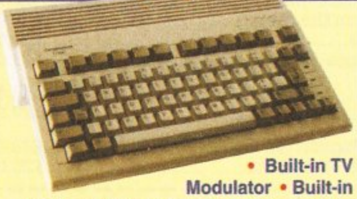
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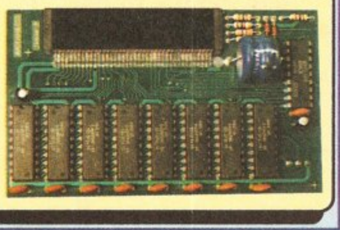
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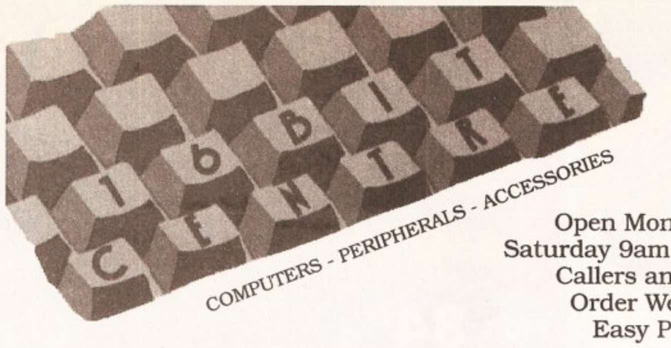
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AREXX FOR ALL

Having covered the basic ARexx groundwork in past issues, Jason Holborn shows you how to get it to control external applications.

Note: the symbol ☛ in listings means do not type a return – the line is simply too long for our narrow columns

Our journey into ARexx programming has taken us through some pretty complex subjects. If you've been following the series since the very beginning, then you should now be a fairly proficient ARexx coder. With your new-found skills, you should be in a position from where you can quite easily code ARexx scripts to handle just about any task. You might even feel such unbridled confidence with ARexx that you've stopped using other languages whenever you need to knock up a "quick and dirty" program to carry out a particular task. They still have their place for larger projects, but no other language is as immediately "on tap" as ARexx.

So far, though, this is about all we've used ARexx for – as an alternative to a conventional programming language. It serves this purpose admirably, but restricting your use of ARexx to nothing more than simple scripts is like using an Amiga as a colourful calculator. ARexx is also capable of a number of other powerful uses, including the control of external tasks and as a macro language for other applications. This month we'll be taking our first steps into the world of ARexx task communication, which is perhaps the most powerful aspect of the language.

Before we go any further though, let's backtrack a little by covering some theory. Task communication is a very powerful facility made possible by the Amiga's multitasking operating system. It means that several completely independent programs (tasks) can talk with each other. Obviously the communication that goes on between tasks isn't the sort of idle banter that we humans indulge in – task communication allows one task to control the actions of another by sending it commands that it understands. The best way to visualise task communication is to think of each task as having its own phone, with each phone connected through a central exchange by phone lines.

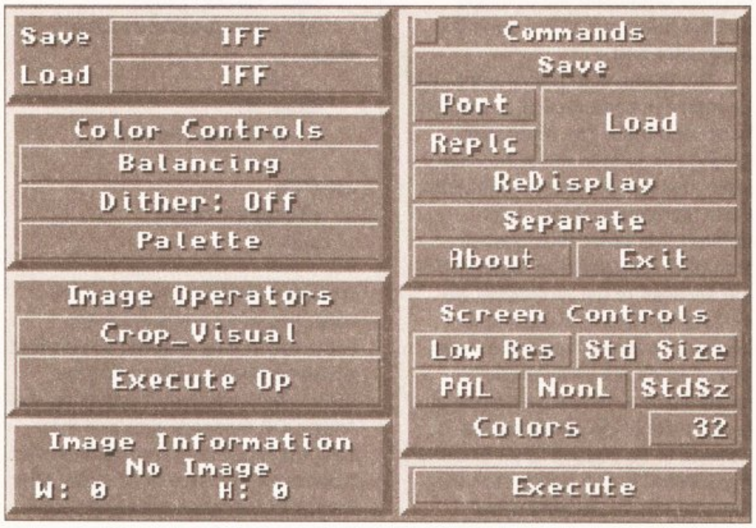
CROSS TALK TRAFFIC

In ARexx terms, this central exchange would be the ARexx server (RexxMast) and the phones are what ARexx calls "message ports". Each port has its own name which is used to distinguish it from any others that might be available. Whenever ARexx wishes to communicate with a particular task, it must first "dial up" that task by attempting to open a link between them. If the task isn't currently running (you've forgotten to load it, for example), then the attempted link will be unsuccessful.

If the task is running, then the link will be complete and ARexx will then be free to communicate with the task. All this jiggery-pokery must be carried out from within your script, so it's up to you to tell ARexx both the name of the message port that you're trying to access and the commands which the task that the message port is attached to actually understands. In many ways, opening a link with an ARexx-compatible task effectively adds new commands to the ARexx language. For example, if you opened up a link with CygnusSoft's *Cygnus Ed* text editor, ARexx would suddenly become equipped with a whole range of text processing commands! Open up a link with ASDG's *ADPro* and ARexx suddenly becomes a very powerful image processor.

Of course you're not actually adding these commands to ARexx. Far from it. All ARexx is doing is acting as a scripting language that sends commands (meaningless to ARexx itself) to another program. Each command instructs the task that ARexx is controlling to perform a particular operation defined by that command. You could quite easily control the task yourself by clicking on its various gadgets and pulling down menus, but ARexx provides a quick and easy method of carrying out the same operations automatically without having to click on a single gadget. It is essentially acting as a macro language.

Each and every ARexx-compatible program has its own unique message port name that is used to make the process of accessing the task that you want as simple as possible.



If you need to perform the same image processing task on several different images, then let ARexx do all the hard work for you.

THE NAMING OF PORTS

ARexx ports aren't necessarily named after the task that they are attached too.

So how do you find out the name of a particular task's port? Well, all software vendors that release ARexx-compatible programs publish the name of their program's port name somewhere within its documentation. Alternatively, the following ARexx script will tell you. (Don't forget to run the task you're interested in before executing this script.)

```
/*Display all message ports*/
say 'The following ports ☛
are available'
say show(ports)
exit
```

If all went well, you should get a list of all the various message ports

AREXX-COMPATIBLE PROGS' PORTS OF CALL

Application	Supplier	Port Name
ProPage 4.0	Gold Disk	PPageARexx
ProDraw 3.0	Gold Disk	PDrawARexx
TypeSmith	Soft Logic	TypeSmith
Art Department Pro	ASDG	ADPro
Directory Opus	INOVAtronics	DOPUS.1
SuperBase Pro 4	Precision	SBPro4
CygnusEd 2.0	CygnusSoft	Rexx_CED
AmigaVision	Commodore	AV.Rexx
HyperBook	Gold Disk	HB_Rexx
ShowMaker	Gold Disk	ShowMakerARexx.port
Professional Calc	Gold Disk	PCalc
DigiPaint 3	NewTek	DigiPaint

available on your system. The list that you get will depend entirely upon what software is currently running, and indeed some hardware devices may also create their own message ports (a hard disk, for example). Software vendors usually give message ports pretty clear names, so it shouldn't be that hard to find the name of the message port that you're after. Just for your reference, the table on the previous page contains a selection of message port names for a few popular ARexx-compatible applications.

TALK TO THE TASKS...

Now we've got all that theory behind us, let's take a look at the commands required to get ARexx talking to other tasks. First we need to open the link between ARexx and the task that we wish to control. This is achieved using the ARexx "**Address <portname>**" command. The Address command opens up a link between ARexx and the message port specified by the **<portname>** parameter. Once the port has been opened, you can then send commands to that port. Let's take a look at the **Address** command in action.

```
/* Address Demo */
Address 'ADPro'
'lformat IFF'
exit
```

Not very exciting, is it! Believe it or not though, this tiny little demo not only opens a link between ARexx and ASDG's *Art Department Professional* (note the **ADPro** port name), but it also sends a message to *ADPro* instructing it to change its load operator (*ADPro* users will understand what a load operator is) to "IFF". If you look closely, you'll notice that the command that was sent to *ADPro* is enclosed within single quotes – this is necessary so that ARexx knows which commands it should keep to itself and which commands it should send. For example, there's little point in sending the **exit** command to *ADPro* because it is an ARexx command and not an *ADPro* one.

The **Address** command doesn't enable us to actually check whether an attempted link with a message port proved to be successful. If we want to do this, we must rely on another ARexx function – **show()**. As we saw earlier, the **show()** function is used to display a list of all the message ports available, but it can also be used to check the existence of a given port. Say, for example, you wanted to check that the user had actually loaded *ADPro* before your program attempted to open its message port. You could use the following code:

```
/* Check port */
if show(ports,'ADPro') then
   address 'ADPro'
else do
   exit
   end
```

ARexx treats AmigaDOS simply as another task, so it's also possible to get your ARexx script to execute AmigaDOS commands as if they were part of the ARexx command set using exactly the same technique. AmigaDOS, too, has its own port, which is identified by the port name **Command**. In order to run an AmigaDOS command, all you have to do is to enclose the command in single quotes and it will automatically get passed through to AmigaDOS.

```
/* ARexx -> AmigaDOS demo */

Address Command

say 'Enter pathname of ☛
directory to display'
pull pathname
'Dir' pathname 'opt a'
exit
```

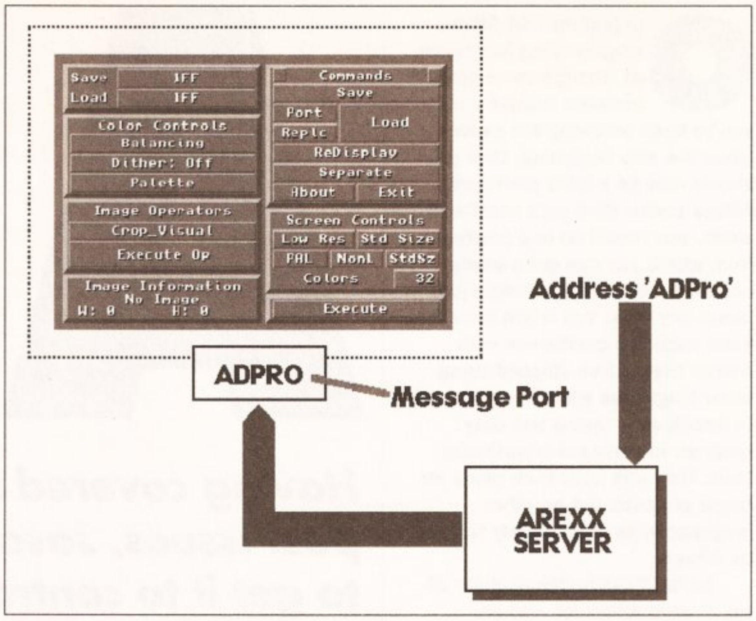
ADPRO SHORTCUTS

You don't have to launch *ADPro*-controlling scripts from the Shell. *ADPro* enables you to attach up to 50 different ARexx scripts to the Amiga's function keys so that they can be executed from within *ADPro*.

All you have to do is to transfer your ARexx scripts to the logical device REXX: (which, by default, is set to the s directory of your boot disk) and give them special filenames that tie in with those required by *ADPro*.

If, for example, you wanted to attach a script to function key 1 (F1), you must call the script "F1.ADPRO". Now, every time you press [F1] from within *ADPro* this script will be executed. Here's a quick guide to the other key combinations (note that the letter "n" should be replaced by the function key number, with the digit "0" representing [F10]):

Function key	Fn.ADPRO
F key + [Shift]	SHn.ADPRO
F key + [ALT]	LFn.ADPRO
F key + [Amiga]	AFn.ADPRO
F key + [CTRL]	CFn.ADPRO



ARexx communicates with other applications through "message ports". Each ARexx-compatible application has its own uniquely-named message port.

If you understood the theory that we covered before, the above listing shouldn't be that hard to follow. It starts by opening the link between ARexx and AmigaDOS using the **Address** command. One thing worth noting here is the fact that – unlike the ports for other programs – AmigaDOS's portname isn't enclosed within single quotes. If you do enclose **Command** within single quotes, ARexx will fail to open the AmigaDOS port.

The listing then prompts the user to enter the pathname of a directory to be displayed. The ARexx **pull** function is used to store the user's input in a variable called **pathname**. Once the pathname has been entered, the script then passes control to AmigaDOS by calling upon the services of the AmigaDOS **Dir** command. Note how the line is broken into three separate strings, two of which are enclosed within single quotes. This is necessary in order to allow the contents of a variable to be passed to an external application. In this particular case, the contents of the **pathname** variable are passed to AmigaDOS, which in turn runs the AmigaDOS **Dir** command and passes the value held in **pathname** to that.

AREXX TAKES THE HELM

This ability to run AmigaDOS commands from within an ARexx script can come in very handy – it gives ARexx almost complete control over the contents of your system's hard disk (or floppy, depending upon your system's configuration). You could, for example, use this facility to actually run a task that you'd like ARexx to control. To demonstrate this, let's go back to *Art Department Professional*. In our previous *ADPro* listing, the script simply ended if ARexx was unable to find the *ADPro* message port, but we could quite easily get the script to actually run *ADPro* for us.

```
/* Run ADPro Demo */

if ~show(ports,'ADPro') then
   address Command
   'run ADPRO:ADPro'
   call delay(1000)
   if ~show(ports,'ADPro') ☛
then
      exit
   else do
      address 'ADPro'
      end
else do
   address 'ADPro'
   end
```

This version of our original *ADPro* script begins in pretty much the same way as the original, but instead of exiting when it fails to find the *ADPro* message port, it opens up the AmigaDOS message port and then calls the AmigaDOS **Run** command in order to force *ADPro* to execute. After waiting 20 seconds (this gives your Amiga plenty of time in which to load *ADPro* from hard disk), the script then attempts to find *ADPro*'s message port again. If it is still unsuccessful, the script gives up trying and exits. If it *is* successful, though, the *ADPro* message port is opened and we're in business! AS

NEXT MONTH

Over the coming months I'll be bringing you a whole selection of comprehensive tutorials specifically aimed at the more popular ARexx applications. Next month we take a deeper look at *Art Department Professional 2.0*.

Modern art from an old master

Keeping up with the Picassos is the name of the game in image processing. Gary Whiteley dons his smock, breaks out his palette and squeezes Art Department Professional 2.3.0 to put it to the test.

Doesn't time fly? It's been over a year since *Amiga Shopper* last reviewed *Art Department Professional*. (It was back in *AS* 10, actually.) In the meanwhile ASDG have continued to improve their flagship image processing package, adding more features and functions in a bid to keep their self-proclaimed lead in a three horse race with Black Belt's *Imagemaster* and GVP's *ImageFX* (both of which I have reviewed in *Amiga Shoppers* past – issues 18 and 27 respectively. If you missed any of these issues, turn to page 116).

If you haven't a clue what I've been talking about so far, *ADPro* (as it is familiarly known) has been around almost as long as the Amiga itself and introduced many of the innovations which were responsible for the growth of image processing on the Amiga. Always professional, each version of the program has brought more firsts and ever increasing stability, maintaining ASDG's reputation for innovative, quality software.

With version 2.3.0 *ADPro* continues its evolution, adding yet more features to an already burgeoning list. Over the years almost all the common image formats have found a place in *ADPro's* Loaders and Savers lists, making it possible to load an image in one format and convert it easily to another, even if it originates on another computer platform altogether. Certain "professional" formats (including TIFF, Targa, SunRaster, Rendition and XWindow) still require the addition of the optional Professional Conversion Pack, but most users will find that everything they need is already present in the basic program.

Don't get the idea that *ADPro* deals only with converting still images – far from it. A very welcome addition is the support for animation files – both building and splitting them. Then there's the powerful image compositing department, where several pictures can be superimposed over each other according to various strategies, which include Alpha channel and transparency effects.

Again, such effects can also be applied during animation construction, and sequences of frames can be combined in special ways to produce wipes, fades and other visual effects.

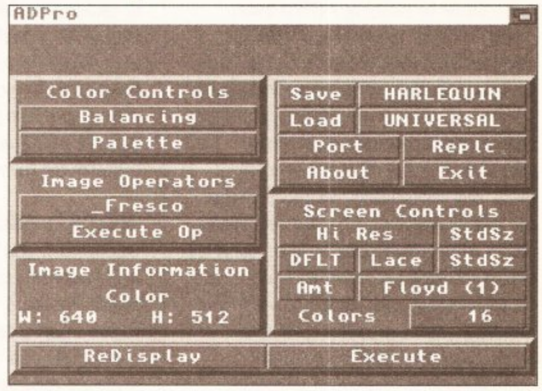
SMOOTH OPERATORS

Augmenting the Loaders and Savers are the Operators, a powerful, but easy-to-use, set of tools which provide a wide range of image processing functions from text addition, scaling and special effects to direct support for many of the top Amiga graphics display devices. New in this version is the ability to launch ARexx scripts directly from the Operator window – another time-saving feature which will please many users.

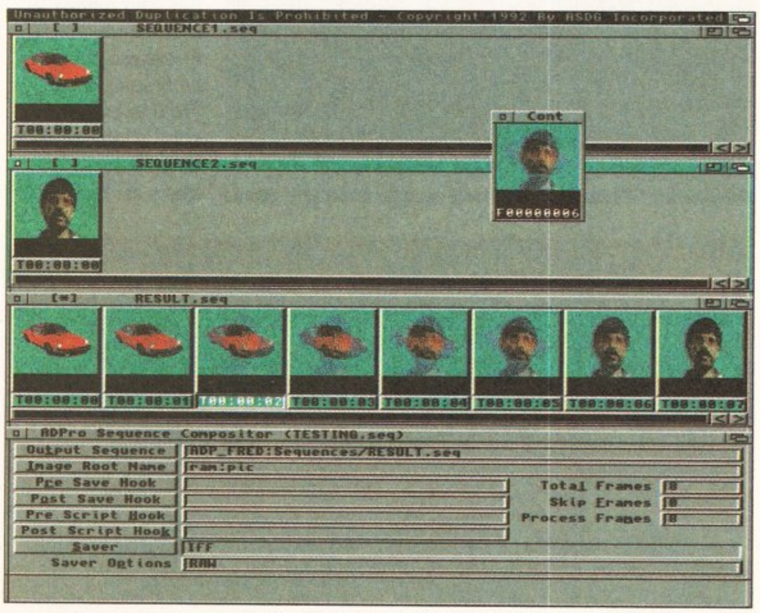
Direct support for Centaur's *OpalVision* and *OpalPaint*, MacroSystem's *VLab* (and its officially acknowledged YUVN format) and – more significantly for the US market than the UK, perhaps – NewTek's framestore image format (version 2 and later only) have all been added for this new version. *Deluxe Paint IV AGA* users will be pleased to hear that *ADPro* can now exchange images with Electronic Arts' favourite paint program.

ADPro regulars will immediately notice that the GUI (Graphical User Interface) has had something of a spring clean. *Separate*, the colour separation tool, is designated as a Saver, rather than a dedicated menu button, and tools have been added both to reflect the new graphics modes delivered by the AGA chips and to provide more control of the dithering settings. In fact, not only have two new dithering modes (large and small ordered) been added to the list, but it is now possible to control the level of dither applied to an image, as well as its type.

All these new additions and



Regular users will notice slight changes to ADPro's plain but functional main Graphical User Interface.

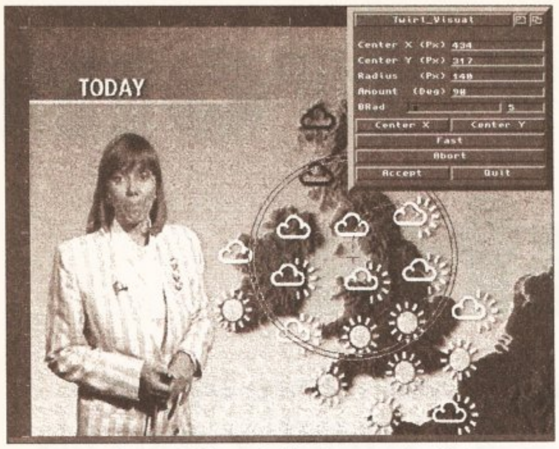


Older versions of ADPro made it hard for non-programmers to process several images. Now FRED gives you visual batch processing – if you can work it out.

WHAT IS IMAGE PROCESSING?

In a nutshell, image processing is any process which can be applied to an image (or a selected part of it) to change its appearance or format in any way. Modifications like colour changes, rescaling, enhancement, blurring, combination effects such as embossing, special effects like twirling, multiple compositing with transparency and other effects may all fall within the realm of image processing.

Any image processor worth its salt will convert and temporarily store an image in 24-bit for the highest possible quality, regardless of the initial input format. The final output format can be determined by the user, but all processing operations will be done in 24-bit to achieve the best results. Because of this high quality, image processors are ideal for making changes to scanned and grabbed images, and are used to provide the output required by publishers, artists and animators.



Outlook a bit grey? The solution is easy. Just take your digitised image, add a simple twirl to the weather map...



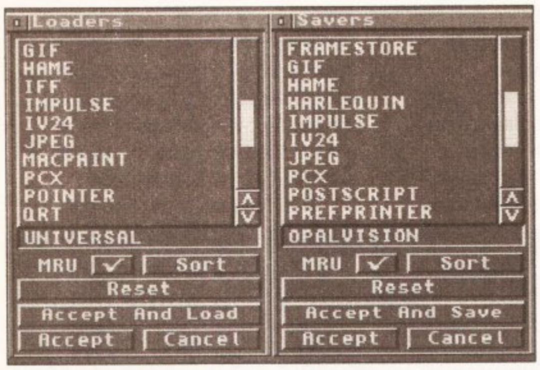
... And put the British Isles in a spin! If you wanted to, you could even turn Suzanne green with envy as well.

changes certainly appear to be worthwhile, and on balance they all contribute to making *ADPro* even more flexible. However, unlike the competition, ASDG seem to be intent on keeping morphing away from their image processor and don't yet seem interested in providing any true painting or drawing functions, or even any tools which would provide for the processing of selected areas, rather than the whole image, such as those already provided by both *Imagemaster* and *ImageFX*. *ADPro* is still very much a power tool, but more akin to a hammer drill in comparison to the more versatile tool-kit approach of its rivals.

Mind you, if you're into ARexx then *ADPro* is almost certainly going to be your favourite image processor – it has a very comprehensive and well-documented ARexx implementation. That's not to say that either of the other two programs is lacking in this respect – its just that *ADPro* packs so many scripts and ARexx features that if you do have to write your own programs then there are plenty of varied programming examples to draw your inspiration from.

RIGHT, SAID FRED

But what if you're not a programmer and you want to process batches of files? Previous versions of *ADPro* made such a task either mind-numbingly dull because of the endless repetition involved or demanded that you learn ARexx. Even the addition of the *FRED* program (short for FRame EDitor, I think) still left many users confused and thinking that writing their own ARexx scripts would probably be a better bet. Well, ASDG have tried to address this mass desertion by providing a range of new ARexx scripts for *FRED* to "hook" on to. What this basically means is that the requested ARexx programs will be fired up while *FRED* is doing its stuff, triggering such batch processing tasks as converting a sequence of 24-bit images into an IFF format defined by the user, cross-fading between two separate images (or sequences), making IFF anims (both ANIM5 and ANIM8 formats) from single images, bulk rescaling – in fact practically the whole range of functions which *ADPro* has to offer, either singly or in combination.



Here are just a few of the many formats which Art Department Professional is now able to Load and Save.

If all this sounds too good to be true, well it almost is. For a start, it can be quite a complex task to get *FRED* up and running successfully. Sequences of frames must first be loaded in, after which it may take quite a few further settings from several different menus and requesters before you can finally get down to the processing. To make matters worse, both novices and reasonably technical people are likely to quickly become confused both by the fairly sparse, technically heavyweight (and sometimes downright mysterious) descriptions of how the various parts of *ADPro* work – *FRED* being no exception – and the annoying fact that there is a mistake in the only *FRED* tutorial provided means that it doesn't come up with the expected results! This, and the complicated setting-up processes, can leave you feeling that *FRED* is a program better left alone, which is a shame, since there are many valuable treasures locked up inside its vaults.

In fact, if I was sorely tempted to leave *FRED* alone altogether after my third attempt at getting the tutorial to work. I persevered (I had a review to write!), and eventually at least got in through the vault door, but my exploration of *FRED's* darker recesses is still far from over.

ON GUARD

Compared to *FRED*, using *ImageFX's IMP* multi-effects processor seems like child's play. Perhaps this is why ASDG have included a new program called *Sentry*, which performs a similar task to both *IMP* and the shareware program *Rend24* (which I highly recommend, by the way). Ostensibly, *Sentry* can be used for batch-processing images, both pre-existing and generated by programs such as *Real 3D, Imagine* and so on. Like *FRED*, the processing commands are controlled by *Sentry* making calls on ARexx programs to do the donkey-work and determine just how the images are to be affected and re-saved.

In use I found *Sentry* to be almost as awkward as *FRED*, not because its interface is difficult to use but because processes which I'd already tried out with *FRED* refused to work successfully with *Sentry* – though I couldn't for the life of me figure out why. Perhaps a more verbose error-reporting system would help – or at least one which makes some sense to the "normal" user who's not a programming expert.

I had used a two-stage process with *FRED* to convert a series of 24-

JARGON BUSTING

COMPOSITING: Laying down one image over another to create a new composite image. One common kind of compositing is "chromakeying", where an image is shot against a background of a uniform colour which is then replaced digitally by a separate image. This is how shots of spaceships in orbit, and the like, are conventionally created.

DITHERING: A way of making an image appear to contain more colours than it actually does by rearranging its pixels according to certain mathematical formulae.

GENLOCK: A device that "slaves" one video source (say an Amiga) to another (say videotape) in order to synchronise their signals. This enables stable mixes and other effects including compositing between the two.

24-BIT: "True colour" graphics, containing up to 16.7 million colours for the best possible clarity and depth. In contrast, 32 colours are 5-bit, 16 colours 4-bit and so on.

TWIRLING: A method of distorting an image (or part of an image) by "twisting" it about a fixed point, as if wringing a cloth with the image on it. The method involves setting the fixed point, defining the boundaries of the effect, selecting a range of "twirl points" (which can be thought of as the points at which you are taking hold of the cloth), then letting the software do the rest. See the example on this page.

Who needs an image processor?

- Computer animators who wish to composite foreground action over backgrounds, convert images into animations or produce certain special effects.
- Artists who want to merge, change, title, or otherwise manipulate electronic images for print, graphics, video or other media.
- DTP producers who need to crop, scale, colour-convert and enhance images for inclusion in printer output, as well as make colour separations for full-colour printing.
- Video makers who require 24-bit special effects and animation sequences
- Anyone who needs to convert images between different formats.
- 3D modellers who need to scale and convert scanned and grabbed images into photo-realistic surface maps for their objects.

bit frames first into rendered HAM images and then into an ANIM5 animation, so I thought I would try to do the same thing with *Sentry*. I used exactly the same ARexx hook programs and the same images, but to no avail. Everything I tried left me dead in the water, with only the unfathomable error messages for company. Sure, I could get the images converted into rendered HAM files, but that was the end of the matter. I was left feeling aggrieved and confused, more so because I had already been able to knock together the anim much more easily with *Rend24* just minutes before. Okay, I accept that programs like *Sentry* and *FRED* offer much more potential power than *Rend24* – but if the user can't figure out how to get at it, then what's the point?

As a "bonus" the latest version of *View* (a freeware image and animation viewer by Michael Hartman) is bundled with *ADpro* 2.3.0. *View* is a neat little program which can display most IFF images (including the AGA modes) and play back ANIM5, ANIM6 and (if you have a suitable Amiga) ANIM8 animations. It's quick and it's easy. And it saves ASDG writing their own ANIM8 player. I'd been regularly using an earlier version of *View* for over a year, so I was pleased to see a new, improved, version doing the rounds.

THE BOTTOM LINE

ASDG have obviously taken up the challenge thrown down to them first by BlackBelt Systems and then by GVP. As far as image conversion, colour separation, full-image processing effects, ARexx operations, input/output flexibility and relative ease-of-use (at least for non-batch operations) are concerned, *ADPro* remains a high-class package. More work still needs doing to simplify both *FRED* and *Sentry* to make them truly user-friendly, and in terms of value-for-money the rivals are looking more and more tempting – especially if you need morphing and painting functions too. Let's hope that competition brings only stronger challengers and improvements for all, rather than one or more vanquished losers.

REQUIREMENTS

Any Amiga, preferably with AmigaDOS 2.04 (or greater) and 4Mb of memory or more. Hard drive and accelerator (for 68000 Amigas) recommended. AmigaDOS 1.3 is supported but not all functions will work under it. ARexx is also required on AmigaDOS 1.3 machines. Software can be run from floppy disk but this isn't really recommended. Full installation requires 3.5Mb of HD space (2.2Mb if compressed with *Imploder*). Note that version 2.3.0 will be the last version of *ADPro* to incorporate support for AmigaDOS 1.3.

Gary Whiteley can be contacted by e-mail as drgaz@cix.compulink.co.uk.

SHOPPING LIST

Art Department Professional v2.3.0 By ASDG £179.99

From Micro-PACE UK Ltd, Unit 10,
Perth Trading Estate,
Perth Avenue, Slough,
Berkshire, SL1 4XX.
☎ 0753 551888.

CHECKOUT ADPro v2.30

Features ●●●●○
ADPro, like its competitors, has many features in its extensive repertoire which make it worth having, although most are no longer unique enough to ensure the domination of the image processing market which *ADPro* once had. Perhaps ASDG should consider incorporating their optional Scanner software, "professional" converters and morphing products into *ADPro* itself.

Documentation ●●●○○
Well-written and extensive, but heavy on technical details and short on practicalities such as how to really get to grips with the software and get the best out of it. Great for programmers but not so hot for the average user or non-technical creative type.

Ease of use ●●●○○
ADPro makes it easy to do all the basic, single-image processing things, but batch processing requires patience, ARexx familiarity, experimentation with *FRED* or *Sentry* and a measure of no-nonsense head-banging determination to succeed.

Flexibility ●●●●○
For full-size image conversions, compositing and effects, *ADPro* is probably still the boss, but the great potential it offers for batch processing is obscured by its ever-increasing swarms of petty menus and confusing instructions.

Value for money ●●●○○
ADPro is starting to look a tad expensive when compared with both *ImageFX* and *Imagemaster's* pile-the-features-high approach, particularly while it is still lacking "painting" functions.

Overall rating ●●●●○
ADPro has become an established favourite among Amiga professionals, but ASDG are going to have to work hard to keep it that way, with both GVP's *ImageFX* and Black Belt's *Imagemaster* packing in morphing, paint functions and more at comparatively reasonable prices. Even so, there's no doubt that *ADPro* still has a secure future – especially if it can continue to keep up in the race for image processing supremacy.

Step into my world

Amiga landscape generators just keep getting better, and VistaPro 3 is no exception. Gary Whiteley puts on his virtual boots and takes a hike in search of reality.

Not long ago, I met a computer artist who showed me *VistaPro 3* running on a PC clone and proudly boasted "I bet you can't do that on an Amiga!" Some people never learn. *Vista* actually made its debut on the Amiga and went from strength to strength. No doubt it's because of this success that PC users can now share in our delight at all the marvels we can create with *VistaPro 3*.

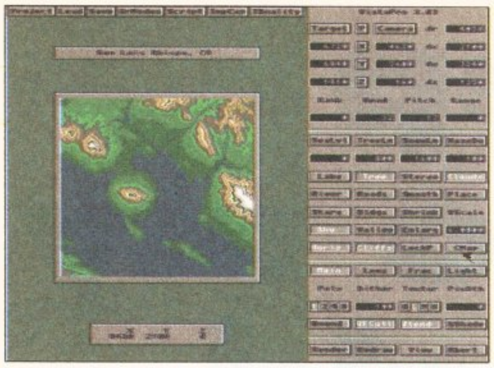
VistaPro 3 is the latest version of Virtual Reality Laboratories' outstanding 3D landscape generator. And now it's got even better. The user interface has been slightly jazzed up to accommodate several new features – among them buildings (don't hold your breath, they're little more than concrete cubes), roads, clouds, and the possibility of manually placing trees, grass, roads and buildings just where you want them. AGA graphics modes are supported, and setting the rendering quality you require has become a matter of a single mouse click.

All the favourite features are still there, of course – you can import DEM (Digital Elevation Model) files, or use IFF pictures to make landscapes. You can generate scripts to fly the camera around a landscape (though it's easier to use the *MakePath* program I reviewed in *Amiga Shopper* 26) and then output the whole fly-through as an animation or sequence of frames.

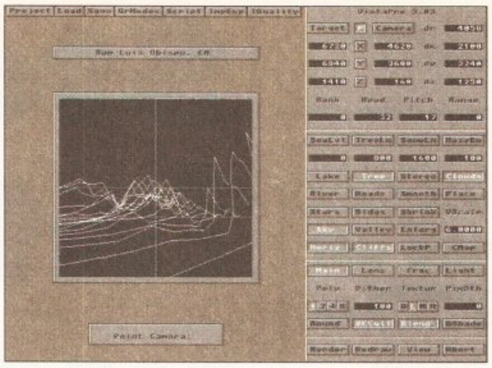
What's more, some of the features have become easier to use as well as more flexible. One nice touch is the addition of an option to show the camera's field of view over the topographic screen map, making its placement that much easier. Another is added control for positioning the light source and the amount of shadowing it creates,



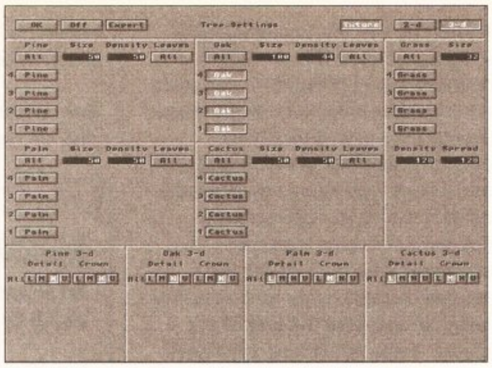
Have a nice picnic by a frozen river, or visit the sunny fjords – VistaPro 3 can generate a 3D landscape for you, in AGA quality if your Amiga is capable of it.



Neat and tidy – that's VistaPro 3's user interface. Note the plan-view topography map on the left.



For a quick camera preview of your landscape, the topography map is replaced by a wireframe view.



It might not look exciting, but the Tree Requester can really bring your landscapes to life.

imparting more realistic depth to a rendered landscape. And, if you have enough memory to cope with it, a rendered image can now be up to a staggering 4,096 x 4,096 pixels square (yikes!).

CLOUDS AND TREES

But the changes which probably add most to the increase in *VistaPro 3's* realism are the improved cloud and vegetation features. Clouds enhance our sense of depth and scale and, since they are very rarely absent from our skies (at least that's the case where I live), a pure blue sky, while ideal for holiday brochures, doesn't really add much to a rendered landscape – and even deserts have clouds. The great thing in this latest version of the program is that clouds are now a menu item, with easy access to control over their density, height, fluffiness and distribution, and not the complex operation they were in *VistaPro 2*. And another thing – these clouds *do* look extremely realistic.

As for the trees, well, they can now be rendered in either full 3D or in their original 2D style. The obvious advantage of this is that three-dimensional trees still look convincing whatever the angle. The problem is that they can take ages to render – especially if you need a forest – so 2D trees may work better in some situations.

Trees can also be tailored to fit the seasons – so you can choose trees without leaves for winter scenes. Or at least, you can choose the leafless version of one of the four generic "styles" of tree available: Pine, Oak, Palm and Cactus (yup, cactus – and yes, I know that palms, cactuses and even most pine trees are evergreens, but only the David Bellamys of this world are going to look that closely at virtual trees). There are also settings to determine how dense the tree growth will be – both on the ground and for each individual tree. A new vegetation category, Grass, has been added for even better results. The trees don't bear any close comparison to their real-world counterparts, but like clouds they add a silver lining of the overall look of *VistaPro 3's* landscapes. Be warned, though, both clouds and trees can significantly increase the rendering time for a scene.

DOWN TO EARTH

Although there are a wide range of landscape files of "famous" locations provided, there's no reason why you can't construct a place yourself. *VistaPro 3* offers several methods for this: you could generate them from a numerical "seed" (try your birthday, or just go random) or load an IFF picture and convert it into an altitude file. If you want to go the whole hog there's a program called *TerraForm* (available separately for £34.99 – see the review in *AS* 26) which enables you to actually "build" landscapes. Once produced, any landscape can be given realistic (as well as surrealistic) proportions and you can even colour it as you wish by making adjustments to the ColorMap settings. Anyone for green skies and red lakes?

Lastly, something for the techies – scripting. *VistaPro 3* has a complete scripting language which can be called either as ARexx commands or as script files to control virtually every aspect of the program, should you so wish. Most users will have absolutely no desire to get into scripting, but there's always someone who wants more control – and this is just for them.

OUTPUT

In addition to supporting most IFF output formats (including 24-bit), DCTV, HAM-E and four different animation formats (IFF, IFF24, RGB and *VistaPro's* own proprietary VAnim format), *VistaPro 3* can save its landscapes out as true 3D models. Although this is only available in Impulse's *TurboSilver 3* format (which is great if you use *Imagine*, by the way) you could always convert the output to a format suitable for your 3D software – though you'll almost certainly lose the surface colouring which is saved with the *TS3* version. Watch out for memory too – if you want to save an object at the highest possible detail levels, it could easily require over 2Mb of filing space and up to 10Mb of memory to render with your 3D software. Most of the time such high detailing is not actually necessary, and adding a surface map and smoothing will likely be all you need to make a convincing 3D landscape.

IN PERSPECTIVE

There's no doubting that *VistaPro 3* is an excellent landscape renderer – which is no doubt why so many animators and artists are using it in their work. If you have a suitable Amiga and you fancy a dabble in something a little more real than a shoot-'em-up, then I highly recommend *VistaPro 3* as one of the best-value – and best-presented – packages around. Even the box is impressive! What else can I say, except... let me get back to it!

REQUIREMENTS

At least 4Mb of Fast RAM (6Mb for AGA graphics). Accelerated Amiga and hard drive recommended. AS

SHOPPING LIST

VistaPro 3.0......................£59.99
By Virtual Reality Laboratories Inc.

From Micro-PACE UK Ltd, Unit 10, Perth Trading Estate, Perth Avenue, Slough, Berkshire, SL1 4XX.
☎ 0753 551888.

CHECKOUT VISTAPRO 3.0

Features ●●●●●
Extensive and practical. Almost everything you'd want in a landscape generator.

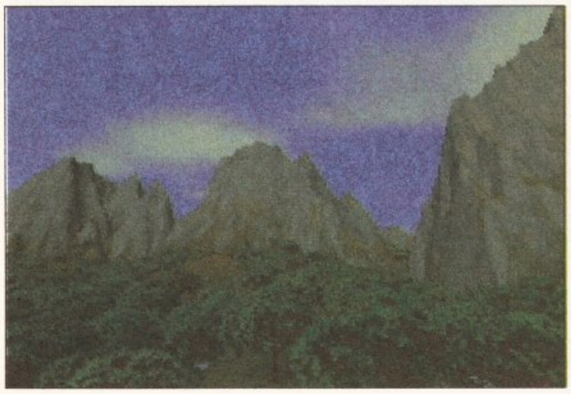
Documentation ●●●●●
Excellent – detailed, helpful and understandable.

Ease of use ●●●●○
After only a short and fairly painless learning process, no-one should have any difficulties using *VistaPro 3*.

Flexibility ●●●●○
Better path setting would be nice, but there's little else to complain about.

Value for money ●●●●●
Great Power-for-the-Pound value.

Overall ●●●●●
If you want great-looking landscapes, *VistaPro 3* does the business.



Build your own worlds. No pollution, no noise, no cars. Perfect – except that it's only virtual reality...



... So enjoy yourself a little! Add virtual trees for the virtual birds to nest in, or even cactuses in the Arctic.

SAILING THROUGH C

It's time to start coding up our Address Book application this month. Toby Simpson offers his guidance...

> Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

This month we'll be writing the first parts of our address book application, so dust off your compiler and prepare your typing fingers!

Before doing anything, dig out June's *Amiga Shopper* (issue 26 – see page 116 if you're missing that one), and refresh your memory about our file structure. Remember that we are using fixed length records, and fixed length fields, for convenience and ease of data access.

If you don't have the **include** files, then I'm afraid you won't actually be able to run any of this month's program, so it really is time to get that money sent off to Commodore.

PROJECT ORGANISATION

Almost every experienced programmer has a different method of organising files and data for each separate project, so you might not necessarily agree with the way I'm doing it here. I have every project I'm working on in a different drawer to avoid any confusion. The address book application consists of several files, and each has a very different purpose. I suggest you create a drawer somewhere called **Address_Book** and as you type in the various files, put them in this drawer.

C programs tend to consist of lots of little files, and our address book is no exception. So what exactly are you going to have to type in this month? Quite a lot. We'll be typing in two **.c** files, containing C program instructions which will need to be compiled, and three of our own **.h** files, which are **include** files. We'll be also typing in two DICE specific files to help us compile our program. Let's look at all these:

● **address_book.c**
This is the main program file. It contains our **main()** function, which is where the program starts when you run it from the CLI. In this month's case, our **main()** function is very simple, and presents the user with a menu giving a choice between one of three options: **Create** a record, **Read** a record and **Quit** program.

● **address_functions.c**
This is where we will be putting all our functions which access our file in any way. Initially we'll be putting two functions in here, **read_record** and **write_record**. More on these later.

● **address_book.h**
This file contains all our DEFINES. Several key pieces of information will remain constant throughout the program, such as the record length and the number of fields. Should we want to change this in the future, we don't want to have to change several occurrences with the danger that we might miss one, so we define a constant or two here so that we only have to change these values in one place.

ADDRESS_BOOK.C

```
/* address_book.c
* MAIN CODE MODULE
* By Toby Simpson. (C) ☛
Copyright AmigaShopper 1993.
*/
#include "address_includes.h"
/* Embed a version string in ☛
our program */
UBYTE *version = ☛
"\0$VER:"VERSION_STRING;
/* Our "main" function */
void main(void)
{
  BOOL quit_program = FALSE;
  char command_line[512];
  char command;
  printf("Welcome to the ☛
address book test program\n");
  /* Enter options until we ☛
ask to quit */
  while (!quit_program)
   {
   printf("\nMain Menu\n\n"
          "R - Read a
record\n"
          "C - Create a new ☛
record\n"
          "Q - Quit ☛
Program\n\n"
          "Enter your ☛
choice:");
    gets(command_line);
    command = command_line[0];
    /* If we entered lower ☛
case force to upper */
    if (islower(command))
      command = command - 0x20;
    /* Act on our command */
    switch(command)
     {
     case 'R':
       read_record();
       break;
     case 'C':
       create_record();
       break;
     case 'Q':
       quit_program = TRUE;
       break;
     }
   }
  /* User selected quit */
  printf("\n\nExiting ☛
program.\n");
  return;
```

● **address_includes.h**
Each one of our .c files will need to have pretty much the same **include** files. Some of these **include** files are our own, specially written for the address book program, such as **address_book.h** above, some are DICE's special C ones, and the rest are Commodore's **include** files.

● **functions.h**
This is the file in which we are going to place all of our prototypes. Function prototypes, as we've discussed before, tell the compiler what a function looks like – that is, its name and how many parameters it has, what sort of parameters they are, and what sort of value the function returns. Prototypes enable the compiler to spot any errors in your source code if you call the function incorrectly.

ADDRESS_BOOK.H

```
address_book.h
/* address_book.h
 * All DEFINES for the ☛
address book application */
#define RECORD_LENGTH 582
#define TOTAL_FIELDS 9
#define VERSION_STRING
"Address Book 1.00 (05-Jun-☛
93)"
```

● **dice_make**
This is a DICE-specific file which lists all of our **.c** files that need to be compiled in order to make the total address book application. This list will grow in the future.

● **make_app**
This is an AmigaDOS script file which, if executed from the CLI by your typing **execute make_app,** will take care of compiling the program for you. This is also DICE specific.

Each file is shown in a separate box, titled by its filename. You can type these in at any point, but you must save them with these filenames. If you're not sure about some of the code, then refer back to previous instalments of this column in *Amiga Shopper* – most of it is explained there. There are also a few new concepts introduced this month. First, we've made use of the Commodore **include** files to access some DOS functions. If you sent off for the Native Developer's Toolkit, you will now have the AutoDocs, which describe every single function in the Amiga's operating system. If you look at the **dos.doc** file, you will be able to read up on the four basic functions which we have used this

ADDRESS_INCLUDES.H

```
address_includes.h
/* address_includes.h
 * A file which includes all ☛
the stuff we need for each ☛
part of the program. */
/* Those include files we ☛
keep talking about! */
#include <ctype.h>
#include <string.h>
#include <stdlib.h>
#include <stdio.h>
#include <exec/exec.h>
#include <exec/types.h>
#include <dos/dos.h>
#include <dos/dostags.h>
#include <dos/dosextens.h>
/* Prototype definitions for ☛
system functions */
#include <clib/exec_protos.h>
#include <clib/dos_protos.h>
/* Include our own include ☛
files */
#include "address_book.h"
#include "functions.h"
```

ADDRESS_FUNCTIONS.C

```
/* address_functions.c
* Functions and support routines for our ☛
address book application, for
* file, record, and field access. */
#include "address_includes.h"
/* Arrays to hold information on field ☛
lengths and names */
int field_lengths[TOTAL_FIELDS] =
  {
  40, 64, 64, 64, 64, 10, 20, 128, 128
  };
char *field_names[TOTAL_FIELDS] =
  {
  "Name", "Address Line 1", "Address Line 2",
"Address Line 3",
  "Address Line 4", "Post Code",
"Phone Number",
  "E-Mail Address", "Comment"
  };
/* void create_record(void);
  This function creates a new record, the
user entering field data
  * in from the keyboard. */
void create_record(void)
{
  char record[RECORD_LENGTH];
  char *record_pointer;
  char temp_line[512];
  int loop;
  BOOL entered_ok = FALSE;
  BPTR file_channel = 0;
  printf("Create a new record\n\n");
  /* Clear our record in case its re-used ☛
memory */
  for (loop = 0; loop < RECORD_LENGTH;
loop++)
    record[loop] = 0;
  /* Get a pointer to the start of our ☛
record */
  record_pointer = record;
  /* Input fields */
  for (loop = 0; loop < TOTAL_FIELDS; loop++)
    {
    entered_ok = FALSE;
    /* Enter this field, with error checking
☛
on length */
    while (!entered_ok)
      {
      /* Prompt with field name */
      printf("%-30s", field_names[loop]);
      /* Now input a value for this */
      gets(temp_line);
      if (strlen(temp_line) < field_☛
lengths[loop])
        entered_ok = TRUE;
      else
        printf("Error, field too long. ☛
Try again.\n");
      }
    /* Insert this field into our record */
    strcpy(record_pointer, temp_line);
    /* Point to next field */
    record_pointer = record_pointer + ☛
field_lengths[loop];
    }
  /* Open our file */
  if (!(file_channel = Open("addresses", ☛
MODE_READWRITE)))
    {
    printf("Can't open our file.\n");
    return;
    }
  /* Seek to the end of this file */
  Seek(file_channel, 0, OFFSET_END);
  /* Write out our data */
  Write(file_channel, record, RECORD_LENGTH);
  /* Now close up the file */
  Close(file_channel);
  return;
}
/* void read_record(void);
  * This function reads an existing record.
*/
void read_record(void)
{
  char record[RECORD_LENGTH];
  char temp_line[512];
  char *record_pointer;
  BPTR file_channel;
  int loop = 0;
  long record_number = 0;
  long data_read = 0;
  /* Input a record number */
  printf("\nWhich record number to read? ");
  gets(temp_line);
  record_number = atol(temp_line);
  /* Open our file */
  if (!(file_channel = Open("addresses", ☛
MODE_OLDFILE)))
    {
    printf("Can't open our file.\n");
    return;
    }
  /* Seek to the correct position of this ☛
file */
  data_read = Seek(file_channel,
(record_number * RECORD_LENGTH),
OFFSET_BEGINNING);
  if (data_read == -1)
    {
    printf("Error reading record %ld\n", ☛
record_number);
    Close(file_channel);
    return;
    }
  /* Read in our data */
  data_read = Read(file_channel, record, ☛
RECORD_LENGTH);
  if (data_read < RECORD_LENGTH)
    {
    printf("Error reading record %ld\n", ☛
record_number);
    Close(file_channel);
    return;
    }
  /* Now close up the file */
  Close(file_channel);
  /* Now display this record on the screen */
  record_pointer = record;
  printf("\nRecord number %ld:\n\n", ☛
record_number);
  for (loop = 0; loop < TOTAL_FIELDS; loop
++)
    {
    /* Show field name and data */
    printf("%-30s%s\n", field_names[loop], ☛
record_pointer);
    /* Go to next field */
    record_pointer = record_pointer + ☛
field_lengths[loop];
```

month: **Read**, **Write**, **Open** and **Close**.

Also, we've used some C functions that you haven't seen before, which are supplied as part of the standard ANSI C. As well as the regulars, we've used functions such as **islower** and **gets**. One of a whole collection of character functions which return **TRUE** or **FALSE** depending on whether or not a specified condition is met, **islower** returns **TRUE** if the supplied character is in lower case. There are absolutely loads of similar functions, such as **isupper** (Is UpperCase), **isalpha** (Is Alphabetic) and so forth. We use **islower** so that our menu accepts **R** and **r** as the same thing.

The function **gets** means "Get a string from the console". We use it to take the user's input from the keyboard. It has some advantages over routines such as **scanf** and **getc** – it gets the entire string entered, spaces and all.

Also this month we've actually used pointers for the first time. Pointers are powerful, flexible, and a great way to introduce bugs. We've defined a variable as follows:

```
char *record_pointer;
```

The "*" means "of type pointer". This means that our variable **record_pointer** is actually just what its name implies – a pointer to characters. We also have a record, which is an array of characters of the length of a single record (**RECORD_LENGTH**) which we define like this:

```
char record[RECORD_LENGTH];
```

We make our pointer point to the start of it by simply doing this:

```
record_pointer = record;
```

By adding the length of each field to our pointer each time, it can be made to point to each successive field in the record. We use this feature in a **for** loop in both **read_record** and **create_record** to show all the fields, or enter them. We have two arrays holding the names of each field, and the length.

So, how does it all work then? The **main()** function in **address_book.c** contains a simple menu with three options. Depending on which one of these you select, it will either quit the program, or call one of two functions in the file **address_functions.c** for reading a record or creating one in our file.

Once you've typed all this in, you'll be wanting to test it. It's likely that you've made a couple of mistakes, so there will be a bit of simple debugging to do. You'll need to refer to the DICE documentation to de-code some of the compiler's more cryptic error messages. Almost all errors will be spelling or punctuation errors. Also, beware of omitted semi-colons at the end of a line. Once you've compiled your program, you'll have an application called **address.x**. From the Shell, type `address.x` to run it. Remember that record numbers start from 0, so after you've entered your first name and address, you access it by specifying record 0.

The address book will create a file called **addresses** in the directory that was current when you ran the program.

If it compiles, runs, but does not work properly, approach the problem in an orderly fashion. Work out where the bug *isn't* first, thus reducing the amount of code that you have to check to find the error.

We'll go into more detail about how this lot works next month. In the meantime, try and get to know the program and maybe improve it by adding bits in at the end of **create_record** to ask if the user is sure before it writes the data. The **create_record** and **read_record** functions are test functions; we won't be doing anything particular to improve these, so you can add what you want to them without fear! AS

FUNCTIONS.H

```
/* functions.h
  * All prototypes for our ☛
functions */
/* Prototypes for our test ☛
routines */
/* Read a record */
void read_record(void);
/* Create a new record */
void create_record(void);
```

DICE_MAKE

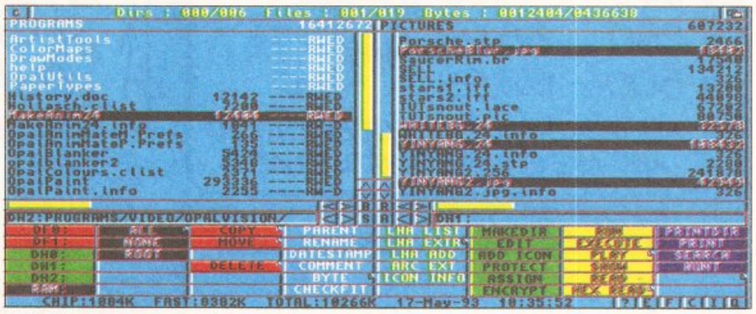
```
# DICE specific.
# This file contains a list ☛
of .c files to compile.
address_functions.c
address_book.c
```

MAKE_APP

```
echo "Compiling..."
dcc @dice_make -o address.x
```

Come out of your Shell

Forget the Shell, and searching through directories, and loading programs. Gary Whiteley sings the praises of Directory Opus 4.



Let Directory Opus take over your Workbench and directory functions. This is how I configure DOpus – yours could look completely different!

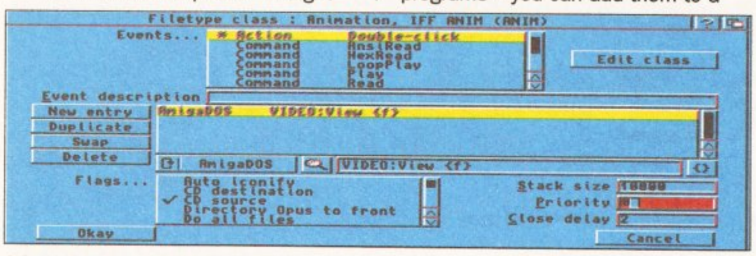
D*irectory Opus 4* is a "directory utility" which makes using the Shell virtually a thing of the past. It can be used to launch programs, play animations, animbrushes, sounds and tracker-type music, show images, display text files, manage all your disk and program filing needs and centralise most of the everyday tasks which you use your Amiga for.

Using *DOpus 4* is very simple – select a file (or several, in some cases) with the mouse and then perform an operation on it, either by double-clicking (which automatically starts certain procedures, according to the program's configuration and the kind of file you've selected) or by just selecting a file and then applying a function to it from the bank of buttons at the bottom of the screen.

You can use *DOpus 4* "straight from the box", but almost everything about it is configurable: colours, screen type, button functions, directory window sizes, colours and gadgets, pull-down menus for launching programs directly, how specific file types are treated when double-clicked on – right down to details like how the date and time are displayed.

With so much being configurable you might initially get confused, but don't panic – almost every aspect of the program has on-line help, which can often save you a trip to the manual (excellent though it is). Just don't expect to become a power user overnight – it can take time to understand all the subtleties.

Although *Directory Opus 4* can perform a wide range of tasks on its own, one of its great abilities is to act as a launch pad for other programs – you can add them to a pull-down menu system or launch them straight from buttons or "hot keys" or by setting "global" hot keys which will work at any time as long as *Directory Opus 4* is loaded (though not necessarily active). Finally, there's the ultimate system for the lazy Amiga user: by specifying how different filetypes respond to certain actions (a double mouse-click, for example), it is possible to have *Directory Opus 4* show a 24-bit image by opening the appropriate software, or maybe play a sound sample, or perhaps load a text file into your favourite editor – the choice is yours. If none of this appeals to you, then there's obviously no hope left for you.



It's not as hard as it looks to get Directory Opus to jump through hoops.

As well as being able to run Workbench programs, *DOpus* can run ARexx programs, Batch files and any of a series of pre-programmed *Directory Opus* commands.

DOpus also includes full printer support and can search directories and text files for key words supplied by the user. It now has full support for AGA graphics files and also includes a comprehensive guide to DOS errors, for when your Amiga's misbehaving. One small negative point is that owners of versions of *Directory Opus* before v3.4 who are considering upgrading will be disappointed to find that they can't just copy their old config file across to v4 – the program has changed so radically that the old system no longer works, so the only thing to do is to configure it from scratch. Mind you, this is nowhere near as hard as it was with v3. Here's a handy tip: use a screen grabber (such as *GrabIFF)* to grab your main screen layouts and refer to these grabs when you are configuring *Directory Opus 4* – then you can set it up exactly like you had v3 and enjoy all the advantages of v4.

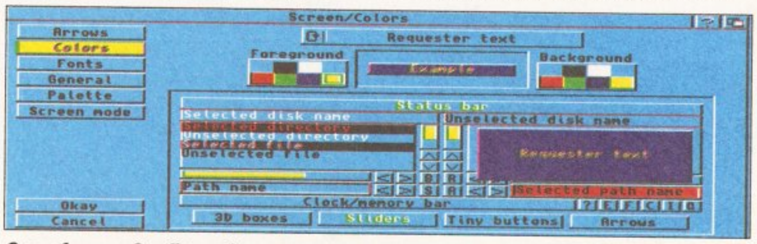
IT'S MAGIC

I've been trying to keep an eye on just how much I use *Directory Opus 4* and I would estimate that it must be at least 50 or 60 times on an average day, sometimes much more. Now, that indicates to me just how useful this program really is. Never mind the latest Jackie Collins – this is something you *really* won't be able to put down. If you want an eminently flexible, friendly, fast and easy-to-use multi-purpose disk utility, which of course you do, then look no further than *Directory Opus 4* – it really is a gem. I don't know what you'll call yours, but I call mine magic! AS

"I USE MINE EVERY DAY"

Here are some of the everyday tasks I use *Directory Opus 4* for:

- Viewing 24-bit, IFF, JPEG and GIF images by simply double-clicking on their file names to load their pre-designated viewers
- Editing text by launching *Transwrite*
- Viewing faxes from my Supra Faxmodem
- Copying, deleting or otherwise managing disk files (both hard drive and floppy)
- Compressing or decompressing files to and from *LhA* or other compact formats for storage
- Reading text files, formatting disks, running programs, previewing bitmap fonts, reading text files, playing animations... and on and on.



One of many Configuration requesters that make DOpus your flexible friend.

REQUIREMENTS

Any Amiga with 1Mb RAM or more. Some functions are only available with higher releases of AmigaDOS.

SHOPPING LIST

Directory Opus 4 .... £64.95
By INOVAtronics ☎ 0707 662861

From: Silica Systems, 1–4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX.
☎ 081 309 1111

CHECKOUT DIRECTORY OPUS 4

Features ●●●●●
If a disk management function's not here, it's probably not worth having.

Documentation ●●●●●
Clear, concise and well presented.

Flexibility ●●●●●
Possibly the most flexible Amiga software I know – it's amazing how far it stretches.

Ease of use ●●●●○
Happiness is seldom more than a mouse-click away, but it takes experimentation to crack all of *DOpus's* diverse functions.

Value for money ●●●●○
Even at this price you'll find there's nothing to touch it, PD or commercial.

Overall ●●●●●
DOpus 4 is more powerful and easier to use than earlier versions, but maintains the excellence you'd expect. Strongly recommended for anyone who needs an effective disk management system.

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Amigas on the box

Ever wanted to see your name in lights (well, at least in the credits of a TV programme)? Two Amiga artists will soon be on the ether.



As you see opponents explode in front of your cockpit, you'll believe you're really inside a shoot-'em-up.

Like the thought of making money with your Amiga, as this issue's cover feature (page 14) suggests? Two talented young Amiga artists have been doing just that. They've produced a series of top-class animations that are being used to illustrate a television feature.

Their work will soon be seen in a new series of arts programmes called *Opening Shot* being produced by the team responsible for London Weekend Television's long-running *South Bank Show*. The animations will be used to illustrate a feature on a new book by Terry Pratchett, the popular fantasy author.

The two artists are Simon Hough and Anthony Murray, both based in the West Midlands. They met about five years ago when they were both at Halesowen college. Simon was taking a computer course and Anthony studied art – but when it comes to producing graphics on the Amiga, they have learnt to share their skills effectively.

Anthony and Simon have long been impressed with the power of the Amiga's graphic capabilities. Both had bought A500s about five years ago before deciding that their interests in producing high-quality graphics justified more powerful machines. They went ahead and acquired two A2000s. These they soon upgraded, adding a GVP G-Force 040 accelerator card and 12Mb of 32-bit RAM along with a 120Mb hard drive. They have also recently purchased an A1200 to give them access to the power of the AA chipset.

To market their skills they have set up their own company, now trading under the name of Crystal Haze Graphics. An important break came when Simon noticed a magazine article on a chap called Matt Black. Matt was on the lookout for someone to produce graphics for a music video he was involved with, so Anthony and Simon sent him a disk containing a selection of their work – and they got the job.



Crystal Haze Graphics – not to be confused with that game show...

It was through this association with Matt that Simon and Anthony were to get their commission with LWT. Matt happened to meet up with Gerald Fox, the director of the *Opening Shot* series, who was trying to find someone to produce a set of "computer-like images" to run with their feature on Terry Pratchett and his latest book. Matt recommended Simon and Anthony. Naturally they were very interested – television is an ideal medium for an animator's work.

After agreeing a contract, they had only two weeks to provide Gerald with a set of finished animations that could be edited into the programme. The brief that they were given to work with was this. In Terry Pratchett's new book *Only you can save mankind (OYCSM)* the central figure, Johnny, is caught inside a futuristic shoot-'em-up computer game which has the same title as the book. Johnny is required to do battle with hordes of hostile alien spaceships and, unsurprisingly enough, save mankind. The task for Crystal Haze Graphics was to produce a series of simulated sequences that would give viewers the impression that they were seeing the game from the "inside".

As a starting point Simon and Anthony were provided with the scripts for the show, and their first job was to draw up a "storyboard" detailing their ideas for the *OYCSM* game – that is, a sequence of scenes in sketch form. This means that ideas can be developed with the client before lots of time and effort have to be invested in producing the final broadcast-quality graphics.

With the storyboards approved, they could now move to the next stage – turning the collection of simple sketches into the high-class Amiga graphics that will be seen during the programme. The main software they chose for doing this was *Real 3D*. Using *Real 3D* they were able to draw up the collection of objects (spaceships and the like) that are to appear on the game's "display" and plot the paths along which these objects will be moving in the final version of the animation.

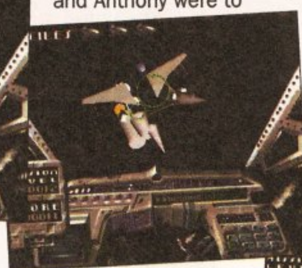
They did require some other software in the course of the project. *DPaint IV* was employed for painting up the cockpit or front panel of the game, and they also needed to use the facilities in *Art Department Pro* to convert their files to the correct format for delivery to the client.

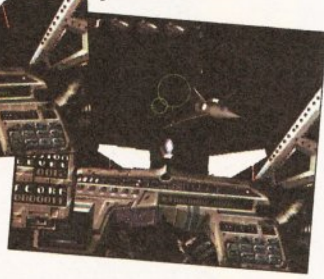
Obviously there were a number of problems that they had to overcome before they arrived at a finished version. Anthony says that perhaps the hardest part was designing realistic-looking explosions for a spaceship disintegrating. At one point they had to "downgrade" some of their work, by using less 3D rendering, to give more of an arcade game "feel" to the final product.

Both director Gerald Fox and author Terry Pratchett are impressed with the finished results. When we contacted Terry to ask what he felt about the visualisation of his *OYCSM* game that Simon and Anthony had produced, he commented: "I'm quite amazed with what they were able to produce in the time."

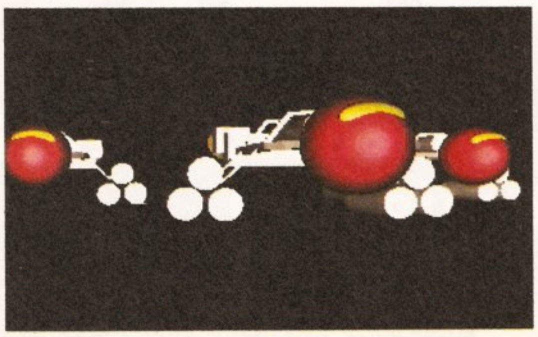
You'll be able to judge for yourself if you make sure that you catch the edition of *Opening Shot* scheduled for broadcast on ITV on Saturday 4 September – check the time in your local listings. If you miss it or forget to set your video, there will be a repeat on Channel 4 – unless they're re-running the Grand National or something... – but it hasn't yet been scheduled. AS





A sequence from the finished animation you'll be seeing on your TV screen.



The preliminary work included the design of graphic elements like spaceships – all done on Amigas!

Talking Shop

Welcome to the Amiga world's liveliest letters page – where you get the chance to speak your mind. To join your host, the editor, Cliff Ramshaw, all you have to do is send your missive to: "Talking Shop", *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Get to it!...

HOLD THE BIBLE

Having just bought a Commodore A570 CDTV for my Amiga 500 Plus, and being very pleased with it, I was amazed to to find that there was no catalogue listing the CD titles which are available. Now come on – if you want people to buy this add-on you've got to show what is available in disc form. Couldn't you print a list of discs available every month or so?

Also, while I am having my say, we are told that these discs can hold the equivalent of 600 floppies. If so, why is it that I have three floppies that hold the Bible, and if I buy a CDTV disc of the Bible I'll be left with the equivalent of 577 floppies worth of wasted space?

Peter H Downes
Worcester

If you give a company called Capri a ring on ☎ 0628 891022, they'll happily send you a full catalogue of the available CDTV titles. They have just announced that they are to stock every CDTV title available.

We'll happily print a full list of titles in *Amiga Shopper*... if more people ask for it. I'm not sure there's much call for such a list, myself. However, rest assured that we'll continue to review what new software does emerge for the machine.

As for your Bible quibble, I don't think it's incumbent on developers to completely fill a CD. CDs have a large capacity, sure, and that's the medium's greatest asset, but if the application they're being used for doesn't need all that space then there is no sense in just filling it.

CARD IS A GODSEND

A couple of years ago I bought an Amiga 1500 and, since I wanted to use it for video titling, I also bought a Commodore 2300 genlock for £75. Why has your magazine never reviewed this genlock?

For anyone with an A2000/ 1500 this card is a godsend. Apart from being a genlock, it provides a second RGB port, which enables the parallel port to be used with peripherals such as Rombo's *Vidi Amiga* (how come your reviews have never mentioned that *Vidi* cannot be used on the A2000/1500 because it obstructs the RGB port?), you get a pretty good colour composite video output which enables you to connect your machine to a TV set or video recorder and you don't have to find room for an extra box on your desktop.

On the subject of video, it might be worth mentioning that a lot of the new AGA graphics modes are absolutely useless for home video work because you can't record them on domestic equipment! Basically, if you need a multisync monitor to view a graphics mode, it can't be used. Professionals may be able to make use of these high resolutions, but not home users.

Regarding Jason Dilling's letter, "In Effect, Unfinished" in last month's issue, I wonder if he has used any PC software recently? Windows 3.1 is still one of the most unstable programs I have ever come across. It tends to crash at the slightest provocation. Unfortunately for the user, bug-ridden software is the norm, especially upon its initial release. This doesn't mean that this is acceptable, just that you have to grit your teeth and live with it.

Kevin F Stubbs
Warrington

The Commodore 2300 genlock was released some time before our magazine was launched, and, it not being the best of genlocks, we haven't seen the value in reviewing it retrospectively.

You should be able to get *Vidi Amiga* to work without blocking your ordinary RGB port – Rombo (☎ 0506 466601) supply a parallel port adaptor cable for A2000/1500 owners.

THE OBLIGATORY £600

I've been thinking about upgrading my A1500 and was prepared to outlay the obligatory £600 on a "basic" accelerator, but now, with the release of the A1200 and A4000-030, we are in a completely different situation. I expected to see GVP reducing the price of their entry-level kit to around £200. What dismay! How can they possibly justify charging £700 for an '030 and 4Mb? Comparing this to the price of an A4000-030, it means my current system (A1500 with 3Mb RAM and 52Mb hard disk) has effectively dropped in value to £200, and even with the accelerator it would be missing AGA graphics.

So come on, GVP and the rest! Why should consumers be forced to absorb the cost of new technology by seeing their kit lose £500 in value every time Commodore invent a new number? Upgrades must drop in price, or you may end up with a worthless accelerator mountain.

Ian McNeill
Carnoustie

I see your point, Ian, but I think your maths is a tad confused. You're forgetting that with your proposed expansion you'd have 3Mb more memory than a new A4000-030. To give you an idea of how expensive RAM is, Commodore have been forced to release the A4000-030 for £999 with only 2Mb of RAM rather than the planned 4Mb. So in fact you'd end up with 5Mb more than an A4000-030 owner.

What do other readers think? Should third-party manufacturers be expected to make up for equipment devaluation due to Commodore's pricing policies?

£25 WINNER ☆ £25 WINNER

I just had to write to thank you for the article on modifying the A500 to 1Mb of Chip RAM [*AS* 27]. For a month before I had been ringing repair shops for this information and the amount the modification is likely to cost. I have been quoted as much as £70 by one repairer. I was beginning to wonder what my next move would be when my July issue of *Amiga Shopper* dropped through the letterbox and solved all my problems. Thanks to your explicit text and pictures I was able to complete the modification successfully in about an hour. Pity about the colour registration on the diagrams – I think you should have a word with the printers about that.

I wish you would run a postal readers' reply service for problems. I am sure that everyone would be prepared to pay for this with a standard charge to cover costs. I wrote in to you with a hard disk problem in January and haven't seen it in Amiga Answers yet. You could still answer a selected number of problems of general interest within the pages of the magazine.

I presume that you will be printing a letter of apology for the misprint on page 41 of the July issue. A £12 increase in subscription charge! Drop the cover disk, print the magazine in black and white on toilet paper if you must, but don't kill yourselves off. The magazine is good, but not worth a £12 increase.

Alan Kendall
Bristol

Ah, a satisfied customer! As you say, the colour registration was slightly out. We've had a word with our printers, and everything should be hunky-dory from now on.

Sadly, a postal help service is unfeasible. Aside from anything else, we print the answers in the magazine so that many readers can benefit from each solution. Sorry about the delay in replying to your hard disk query – there has been something of a backlog, which is just about cleared now, putting us in a position to provide a much quicker service.

I'm afraid the new subscription price is not a misprint, but at least you've got a chance to take out a subscription at the old price. The cost of producing the magazine has gone up, and the money we're making from advertising is going down. We have to up the price of the magazine to keep it profitable. This issue costs £1.95; future issues with disks will cost £2.95. The rise in subscription price simply reflects the rise in cover price. It's unfortunate, but necessary.

Find your local group

There's sure to be a group of Amiga users near you! This issue: the North, Scotland and overseas.

NORTHEAST

Amiga Artists Club 34 Roundhay Mount, Leeds LS8 4DW. For Amiga artists, musicians and coders. Pirates not welcome. Free. ☎ Kam on 0532 493942, 5-8pm. (AS33)

Amiga Network International 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE. (AS33)

Amiga Utd Disk based, reviews, competitions, help service, BBS, games and utils. Contact D Collingwood, 14 Linden Close, Hutton Rudley, Yarm, Cleveland TS15 0HX. £10 a year. (AS33)

Artman News, views, reviews, free PD for your articles. Free membership. Send blank disk plus SAE for free disk mag and two free games to A Greenwood, 40 Northwell Gate, Otley, West Yorks LS21 2DN ☎ 0943 466476. (AS33)

Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire DL9 3HE. (AS33)

Chester-le-Street 16-Bit Computer Club Exchange advice and swap tips. Meets Mondays from 7.30–9.30pm, Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Contact Peter Mears ☎ 091 385 2939. (AS33)

Club 68000 Competitions, programming, music. Meets Harrogate Leisure Centre, Mondays 6.15pm–10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks HG3 1EJ ☎ 0423 891910. (AS33)

Club Amiga £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear. (AS33)

Club Futura Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN. (AS33)

Darlington Commodore Users Club News, discounts, cheap PD, advice, newsletter and more. Annual membership £5. Contact S Wheatley, 1 Ruby St, Darlington, Co Durham DL3 0EN. (AS33)

FST Amiga Club Bi-monthly newsletter, all types of activities. For £15 membership you receive one free commercial game plus one PD disk plus 11 further PD disks, one per month. Contact Tel or John, 17 Grasmere Close, Penistone, Sheffield, Yorks S30 6HP. (AS33)

Harley's PD Swaparama PD swapping by mail. Contact G Varney, 140 Weston Drive, Otely, West Yorks LS21 2DJ ☎ 0943 466896. (AS33)

Pennine Amiga Club Free membership, free advice and a newsletter. Contact Neville Armstrong, 26 Spencer Street, Keighley, West Yorkshire BD21 2BU ☎ 0535 609263. (AS33)

Red Vox For musicians and artists to swap samples, modules, artwork etc. Beginners and advanced. Free membership. Send SAE to Ian Ridley, 66 Birtley Villas, Birtley, Chester-le-Street, Co Durham DH3 1HP ☎ 091 410 2228 after 6pm. (AS33)

Software City Swapping, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollis Close, Manor Estate Farm, Rawmarsh, Rotherham, South Yorkshire S62 7LX ☎ 0709 526092. (AS33)

Southport Amiga Users Advice, friendly evenings Mondays at 8pm. No charge, discounts from local store. For info contact Michael Mitcham, 5 Easdale Drive, Ainsdale, Southport, Merseyside ☎ 0704 79936. (AS33)

Steel PD, cheats, ideas, music, art, programming, hardware mods. Free membership (postal only). Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB. (AS33)

The Amiga Club Monthly newsletter, competitions, software exchange, huge PD library, cheats, tips, reviews. Contact G Starling, 31 Pine Lea, Brandon, Durham DH7 8SR. Membership £10 life plus two free games and DCopy. (AS33)

The Amiga Studio Friendly, helpful advice for serious users of the Amiga. Monthly newsletter, PD library, free loan of equipment to members, bar. Meets 7pm Tuesdays, Mitchells Club, Scotia Road, Tunstall. Contact Dave Rose ☎ 0782 815589. (AS33)

Wardray Hern Consortium User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection – worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX. (AS33)

Warpdrive Help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 per year. Contact B Scales, 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715. (AS33)

NORTHWEST

Allbit Computer Club General hints and tips, advice, competitions, draws, shop. Meet at The Earle of Crewe, 7.15–10.30pm. Contact Glyn or Mick, 0270 666277. Membership £2. (AS33)

Amiga Users Group Part 2 Advice, technical support, BBS, PD library, tuition, etc. Contact Andy Wilkinson, 25 Glen Eldon Road, Lytham St Annes, Lancashire FY8 2AX ☎ 0253 724607. Free membership. (AS33)

Computeque From beginner to advanced user. Meets 7.45pm–10.30 pm every Tuesday at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs. Contact Steve Lalley ☎ 0695 31378. Half year membership £2.50 children, £3 adults (AS33)

Fylde Computer Club All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502. (AS33)

Hyndburn Amiga Users Club Tuition, advice, PD, and more. Meets Mondays 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289. (AS33)

New Hall Amiga Users Club Games, graphics, music, Workbench programming. Meets 7pm every Tuesday, New Hall Social Club, 104 Bury Rd, Dawtenstall. Membership £5 per year, under 16s not allowed. Contact Bill Grundy, 115 Stanley St, Accrington, Lancs. ☎ 0254 385365. (AS33)

SCOTLAND

Amiga Helpline Software/hardware help service, free access to PD, DTP fonts and clip-art, plus general chit-chat. Send stamp for details. Contact Gordon Keenan, Amiga Helpline, 6 Skirsa Square, Glasgow G23. Membership £20 per year. (AS33)

Angus Amiga CDTV club Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership. (AS33)

Edinburgh Amiga Group Membership £5, inc free advice and PD. SAE to Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE. (AS33)

Lothian Amiga Users Group Advice and help in buying hardware, software etc, group buying, dealers' circulars welcome. Membership free. Contact Andrew Mackie, 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR ☎ 0506 630509. (AS33)

Perth and District Amateur Computer Society General advice, talks, Amiga PD. Meetings third Tuesday in every month, 8pm. Membership £6 or free for under 16s. Contact Alastair MacPherson 137 Glasgow Rd, Perth. (AS33)

Redburn Computer Users Group Help, ideas, PC, graphics and business. Meets every second Wednesday 6.30pm to 9.30pm. Contact Ruby Anderson ☎ 0294 313624. (AS33)

Tay-Soft PD Club Non-profit-making postal PD, advice, disk newsletter, helpline 6–10.30pm. Contact Dave Thornton, 46 Balmerino Road, Dundee DD4 8RR ☎ 0382 505437. Membership £2.50 (free Utils disk on joining). (AS33)

OVERSEAS

16-32 Micro Programming AMOS, bimonthly fanzine, PD (Fish → 590). Membership 100FF or £10. Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France ☎ 315220 02. (AS33)

32-bit ware Devoted to A1200 and A4000 – PD, coverage of new software for these machines, games help. Meet on Hurricane BBS, mostly Saturday nights. Contact 32-bit ware, Ekorrstigen 10, 147 63 Tumba, Sweden. (AS33)

Amiga Addicts Newsletter and open nights. For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland. (AS33)

Amiga Athens club PD swaps, tips, cheats etc. Free membership, just new PD or tips in exchange for our services. Contact Stefanos Papamichael, 9 Derfeld Rd, Patisia, 11144 Athens, Greece ☎ 01/2027973. (AS33)

Amiga Pros User Group, Greece Concentrates on promotion of the Amiga in Greece, plus DTP, AMOS and graphics. Contact Stefanos Siopoulos, 52 Silivrias Str., N. Smyrni 17123, Athens, Greece, ☎ 01/9349963. Membership free. (AS33)

Asia Amiga Association Newsletter, PD, information, advice, ideas, exchanges. Membership HK$250 per annum. For more info contact Pete Alex, Room 11c, Fortune Court, 4–6 Tak Hing St, Kowloon, Hong Kong ☎ 7245196. (AS33)

AUGFL vzw Bi-monthly newsletter, PD, distribution & support of Belgian programs, registration-site, tips. 750 Bfr/year membership. Contact Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium. (AS33)

City Centre Amiga Group All-round user group, esp. PD, DTP, help for new users. Meet Ormond Hotel, 2–6pm. Contact Patrick Chapman, 70 Ballygall Crescent, Finglas East, Dublin II, Ireland, ☎ 345035. Membership £3 per week. (AS33)

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library. Membership A$24. Comp-U-Pal, 116 Macarthur Street, Sale, Victoria 3850, Australia. (AS33)

Danish AMOS user group Bimonthly disk mag, £2 each, PD library. SAE for info. Contact Tom Poulsen, Stenmøllen 28, 2640 Hedehûsene, DK Denmark ☎ 42 16 54 84. (AS33)

Gibraltar Amiga Users Club PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918. (AS33)

HTS (Malta) Free membership. Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023. (AS33)

Malta Amiga Club Contact Zappor, PO Box 39, St Julians, Malta, ☎ 440453 (AS33)

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447. (AS33)

Navan Computer Club Software reviewing, graphics, business, news and chat. Meet various hotels in Navan, 7.30–9pm. Contact Mark Arnold, Cannistown, Navan, Co Meath, Eire ☎ 046 21078. Membership £6 per year. (AS33)

N Ireland Amiga User Free PD, disk-based mag £2.50 per issue. SAE to Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS. (AS33)

Northside Amiga Group Lectures by professionals on different Amigas and associated hardware. Member demonstrations on serious software and games. Meets 8pm alternate Mondays, Donamede House, Dublin 13. Contact William Kelling, 10/A Rainsford Avenue, Dublin 8, Ireland ☎ 01 532 807. (AS33)

Royal Air Force Amiga Club Loads of new PD. Meets 1900-2000 hours, Thursdays, Blk 35, Room 40. Send 10 of your PD disks plus 2 x 24p stamps to Stan Young, HMF RAF Laarbruch, BFPO 43 ☎ 445. (AS33)

Singapore Sling Promotes Amiga in Singapore. Meet Eugenia Court, every Sunday 1pm. Contact Eric Chai ML, Block 4 #14-413, Pandan Valley, Singapore 2159, ☎ 65 4680630. Membership free. (AS33)

Software Exchange Club Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, Co. Wexford, Republic of Ireland. (AS33)

Worldwide PD Club Over 2,680 disks – send blank disk and SAE for catalogue. Membership DM60 a year or DM6 a month. Contact Dave White, Berliner Str 39, 4030 Ratingen 1, Germany ☎ 02102 499729 (Germany). (AS33)

Note: this list is provided as a free service for amateur, non-profit-making user groups. *Amiga Shopper* does not endorse or recommend any particular group and cannot be held responsible for any losses or problems you might suffer.

GETTING YOURSELF LISTED – AN IMPORTANT NOTE

Your user group will be listed here free of charge for six issues, then deleted to prevent defunct groups being listed indefinitely. The number at the end of each entry is the last issue in which that entry will be included. If you want your group's entry left in, just send in this coupon again a couple of issues in advance. PD libraries are now listed at the end of the PD section – this issue, page 112.

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS28

Group name ....

Type of activities ....

....

Place of meetings ....

Time of meetings ....

Contact name ....

Contact telephone number ....

Contact address ....

....

....

Membership fee ....

Take control of OctaMED

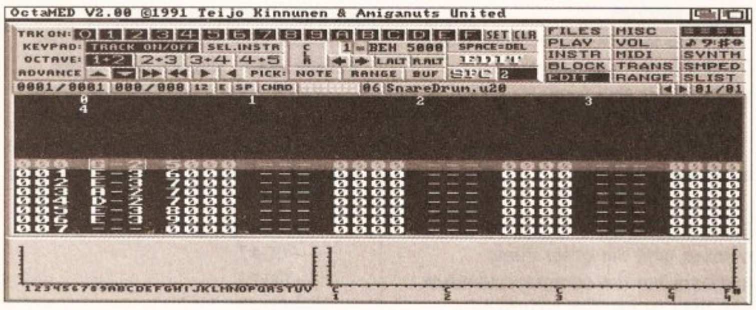
After last month's look at how to get started with OctaMED, Tim Tucker is back with more tips and advice on how to get the most out of the program.

Last month we saw the basic concepts behind *OctaMED* and how to record and play some music with it. (If you missed that issue, with *OctaMED* on the cover disk, turn to page 116.) This month we're going to delve a bit deeper and look at some of the powerful controls available to you in *OctaMED*.

To start, first boot up *OctaMED* and do as we did last month – load the demo song *Esc2Heaven,* found in the **Demos** drawer of the *OctaMED* disk. Now go to the MISC panel and select CLEAR SONG ONLY followed by CONFIRM. Press N to answer No to the question "Flush Unused Instruments?" Now once again we have just the instruments from the demo song without the song itself.

The first shortcut we can take is to put together a drum kit. In last month's tutorial it was kind of fiddly to enter drum parts because each part of the kit was entered into its own track and we had to keep changing the sample we were playing. It's sometimes good to keep the independent drum parts separate so that you can keep track of what's going on, but often you don't want the kit taking up extra tracks. So, here's how to put together a drum kit to make life a lot easier in future.

First we're going to enter all the samples that will form the drum kit into a track. Choose the Bass Drum sample on the status panel (05 BassDrum.u20), move the cursor to the top of the first track (Track 0), make sure that **Edit** is turned *on* (the fastest way is to click on the little E in the status panel to highlight it) and **Space** is *off* (if it is on, click on the SP in the status panel to turn it off – it should not be highlighted). Now press the key [T] on the Amiga keyboard to input one note of the bass drum. The first line (line 000) of the first track should now have the entry G-2 5000 and the cursor should have moved down to the next line (001).



This is how the screen should look after you've entered the separate drum samples. You can then create a drum kit using these sounds.

Now choose the snare drum sample in the status panel (06 SnareDrum.u20) and press the key [P] on the Amiga keyboard to enter the snare drum. Line 001 should read E-3 6000. Choose the tom drum sample (07 TomDrum.u20) and press keys [P] then [Y] then [W]. The next three lines should read:

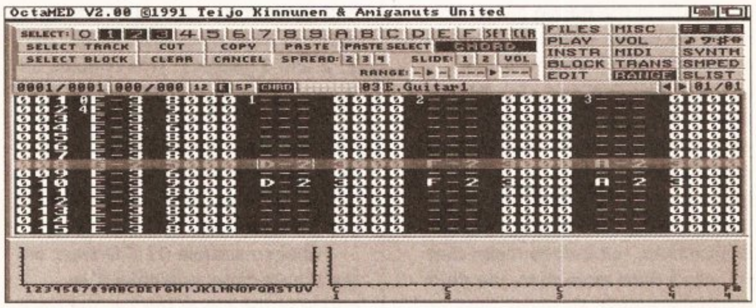
E-3 7000
A-2 7000
D-2 7000

Select the closed hi-hat sample (08 CloseHiHat.u20), press the [P] key on the Amiga keyboard to enter the note E-3 8000, and finally select sample 09 OpenHiHat.u20 and press the [P] key to enter the note E-3 9000. If you play this block it sounds like a drummer hitting every drum on his kit in succession – not much use yet, but now we can start assigning the drums to their own individual keys.

First turn **Edit** off (click on the E in the status bar to de-select it) and move the cursor back to the top of the track, onto the bass drum note. Then click on EDIT to bring up the Edit panel. On the right hand side of the panel you'll see the number 0 in a box with two arrows beneath it. Click on the right arrow to change the number to 1, then click on the gadget PICK: NOTE underneath the arrows. You should see some numbers and letters entered into the box next to the number.

What you have done is assign the note and sample under the cursor to play whenever you hit the Shifted number key indicated – in this case, holding down Shift and pressing the number 1 key (on the main keyboard, *not* the numeric keypad) will now play the bass drum. To assign the snare drum, move the cursor to the next line (001), click on the arrow in the edit panel so that the box reads 2 and click on PICK: NOTE to store the preset. Now holding down Shift and pressing the number 2 key will play the snare drum. Assign the rest of the drum kit the same way, and you should finish up with these assignments:

Shift + 1 – Bass drum
Shift + 2 – Snare drum
Shift + 3 – High Tom
Shift + 4 – Mid Tom
Shift + 5 – Low Tom
Shift + 6 – Closed Hi-Hat
Shift + 7 – Open Hi-Hat



The CHORD function enables you to space a chord out over more than one track, one note per track.. Here we've put a D minor chord in tracks 1 to 3.

From now on, entering drum patterns is a lot easier, because you don't have to keep changing the sample for each part. Don't worry, you don't have to go through this procedure every time you load up the program. You can save the assignments as part of the default settings which are loaded whenever you boot *OctaMED*. Let's do that now and look at what else we can save as defaults.

Click on MISC to bring up the **Miscellaneous** panel, which is where you save your preferences. You may have noticed while playing around with *OctaMED* that whenever you play the note B it's displayed as an H. This is because some European countries call the note by that name. However, B makes more sense to us, so click on the gadget **H > B** and it will be displayed correctly from now on. If you don't like the little man on the end of the pointer, and you'd prefer a normal Workbench style pointer, click on the gadget **JUMP: OFF.** You can also change the screen colours from here. Now click on **SAVE PREFS,** so all these presets load every time you boot *OctaMED*.

The drum kit assignments we made will also be saved, but the samples themselves won't be loaded. You'll have to load the drum samples in the same place every time, or the assigned keys won't play them. For example, if instead of loading a bass drum as instrument number 05 you load a guitar, pressing Shift + 1 will play the note G-2 on the guitar. The best thing to do is clear track 1 of the notes you entered earlier and save the current set-up as a dummy song called **Default,** so that all the instruments will be loaded in the right place and you can just begin recording music straight away. This saves having to load the demo file every time and clearing the tracks of notes.

Now let's enter a drum part using the assigned keys. First we need to remove the drum sounds which we entered to assign the keys in the first place. Make sure that the cursor is still somewhere in the first track, click on RANGE to bring up the **Range** panel, select the **SELECT TRACK** gadget and then click on **CLEAR.** Move the cursor to the top of track one, ensure that **Space** is

turned off and hold down the Shift key all the time while entering the following key sequence on the main keyboard *(not* the numeric keypad):

1 6 7 6
2 6 7 6
1 2 7 6
2 6 7 6

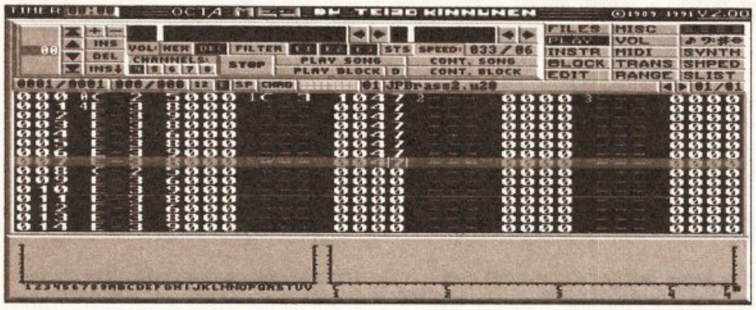
(We've shown the key sequence in groups of four here for convenience when you're typing them in.) This should take you up to line 015. Select the entered notes by holding down the right mouse button and dragging from line 000 to line 015, click on **COPY** in the **Range** panel, move the cursor to line 016 and click on **PASTE** in the **Range** panel. Now move the cursor to line 032 and click on **PASTE,** and finally move the cursor to line 048 and click **PASTE** again. You've now filled the track with the drum pattern, and not only was it quicker, it's also only taken up only one track, not four. This leaves the remaining tracks free for other instruments, but it does mean that you can't have more than one drum playing at a time. However, click on **PLAY BLOCK** in the **Play** panel and you should hear that it sounds fine if you arrange the pattern carefully, and it actually gives the impression of constant hi-hats and so on.

CHORDS

So far we've only entered monophonic lines into *OctaMED* – that is, parts which only play one note at a time. However, there is a facility which enables you to enter chords straight into the program. A chord is a group of notes, most often three, which are played at the same time to produce harmony. Let's now use the remaining three tracks to see how chords are entered.

The **Range** panel is where all the parameters for entering chords can be accessed, so click on the **RANGE** gadget to display it. A chord is spread across a number of tracks, with one note per track, so the first thing to do is to select the tracks using the track number gadgets in the row across the top of the panel. First click on the **CLR** gadget at the end of the row to get rid of any previous selections, then select the **1, 2** and **3** gadgets. This enables us to enter a note each into tracks 1 to 3 to create three-note chords. Next, click on the gadget marked **CHORD** to enter **Chord mode** (there is a gadget marked **CHRD** on the status panel which does the same thing).

Choose sample 03 E.Guitar1 on the status panel and move the cursor to the top of the second track (Track 1) and press the [Q] key. While still holding the [Q] key, press and hold the [E] key, and finally with both the [Q] and [E] keys still held down press the [T] key. Now let go of all three keys. With each key press you will have seen the cursor skip to the same line in the next track, and you should end up with a chord of C major across tracks 1 to 3. Play the Block to hear the effect.



Creating chords, or more accurately Arpeggios, in one track of OctaMED. Track 1 contains the commands necessary to produce the effect.

Move the cursor down to line 008, press and hold the keys [W], [R] and [Y], then move the cursor to line 010 and do the same again. Move the cursor down to line 016 and press and hold the keys [T], [U] and [O], then move the cursor to line 018 and do the same again. Move the cursor down to line 026, press and hold the keys [T], [U] and [O]. Move the cursor to line 028, press and hold the keys [R], [Y] and [I]. Finally, move the cursor down to line 030 and press and hold the keys [T], [U] and [O] again. Play the Block to hear the chord progression. It only takes up half the block, so we need to do some more copy-and-pasting to fill the block. Using the right mouse button, drag-select all three tracks from line 000 to line 030 (you can drag horizontally as well as vertically, remember). Click on **COPY** in the **Range** panel, move the cursor back to the second track (Track 1) to line 032 and click on **PASTE.** Now listen to the block again to hear the drum track and chords together.

There is a way of creating chords in *OctaMED* using only one track. This has the obvious advantage of freeing up the other tracks for other instruments, but the resulting chord is not as smooth as with the method just described. The way it works is by using the player commands and effects settings.

If you look at any note entered in *OctaMED* you'll see that it's presented in this form:

C-3 1 0 0 0
| \ |
command number \ |
data byte

C-3 is the note itself, 1 is the sample number, and the other three numbers are the command number and data bytes. The command number indicates which effect you're applying to the note, the data bytes give values for that command, and you enter the values by moving the cursor to the relevant field and typing them in. The effects available range from pitch slides to vibrato and volume effects, but for now let's look at the first, arpeggio. This changes the pitch of the note very quickly – six times during each note in fact. The change is so quick that it's perceived as a simultaneous chord.

As always, the first command is numbered 0, so the command number doesn't need entering (it's set to 0 automatically when you enter the note). All you need to enter are the data bytes, which indicate the other notes which will form the arpeggio. There are three notes to an arpeggio – the first is the note actually entered, the second is a pitch of however many semi-tones up you stipulate in the first data byte, and the third is a pitch of however many semi-tones up you stipulate in the second data byte.

To illustrate, let's create the chord of C major. This consists of the notes C, E and G. Here's how we'd create this in *OctaMED*:

C-3 1 0 4 7
| \ |
0 = Arpeggio \ |
data bytes

C-3 is the original tone. The first data byte has a value of 4, indicating that the second tone will be four semi-tones higher than that – which is E-3. The second data byte has a value of 7, so the third tone will be seven semi-tones higher than the original note, which gives G-3. Thus we have a chord of C major. Just putting the values on the first note would produce such a short chord that the effect would not be properly heard, so you need to extend the chord for a longer time. You don't need to enter the note and sample number details again, just the data bytes.

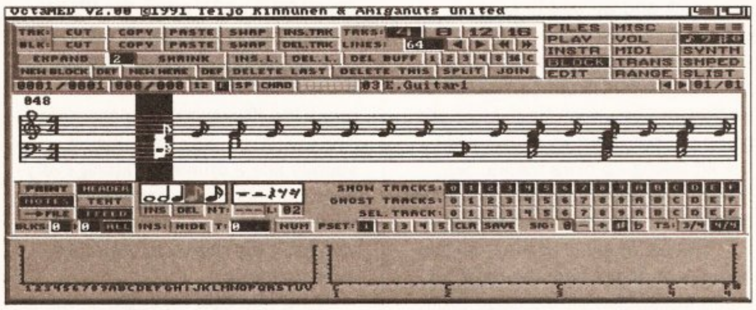
Try an example using the Brass sound, 01 JPBrass2.u20. To make a chord last two beats, enter this (press the key I to get the note C-3):

C-3 1047
— 0047
— 0047
— 0047
— 0047
— 0047
— 0047

The warbling effect you hear is due to the pitch changing so quickly. Here's a list of data byte values for the different chord types:

Major chord – 047
Minor chord – 037
Diminished chord – 036
Augmented chord – 048
Sus 4 chord – 057

Next month we'll look at some more of *OctaMED's* many functions. AS



The Block editor is not the easiest way to see at a glance what chords are being played, so you can use the Notation editor to view the chord sequence.

SOME HANDY KEYBOARD SHORTCUTS

PLAY SHORTCUTS

Spacebar – Stop playing
Alt + Shift + Spacebar – Play song
Shift + Spacebar – Continue song
Alt + Spacebar – Continue block
There is no short cut for Play Block

EDIT SHORTCUTS

DEL – Delete the note or number under cursor
Shift + DEL – Delete the note and the command numbers
Alt + DEL – Delete only the command numbers
Backspace – Deletes the note and moves following notes up
Shift + Backspace – Inserts an empty note slot
Alt + Backspace – Deletes the current track
Alt + Shift + Backspace – Inserts a new track
Shift + Cursor up – Previous block
Shift + Cursor down – Next block
Shift + Cursor left – Previous sample
Shift + Cursor right – Next sample
Left + Alt + Cursor up – First block
Left + Alt + Cursor down – Last block
Alt + Cursor left – Moves the cursor to previous track
Alt-Cursor right – Moves the cursor to next track

Make music on a budget

FUTURE MUSIC

You and your computer can make amazing sounds, without burning a hole in your wallet.

This month *Future Music*, Britain's best-selling music technology magazine, shows you how it's done.

Plus...

- Utah Saints – their chart-storming, sample-mangling secrets revealed.
- Evelyn Glennie – the world's top percussionist and her dream studio.
- Technosound Turbo 2 – the low-down on the latest sampling package.
- All the latest music software and high-tech hardware reviewed.

***FM* 10 is at your newsagent on 15 June – don't miss it!**



Window SHOPPER

In the shop window this month: a fascinatingly varied selection of Amiga-related goodies, including a book, a video, a CD and a mouse.

APPROACHING ZERO

Authors: Bryan Clough & Paul Mungo
ISBN: 0-571-16813-2
Publisher: Faber & Faber
Price: £4.99 (paperback)

Enter the midnight world of computer hacking – perhaps the most anonymous of "white collar" crimes – as Clough and Mungo lucidly describe the practices of phreaking, dumpster diving, social engineering, war dialling and other methods employed by the digital burglar to force entry to computer systems around the world.

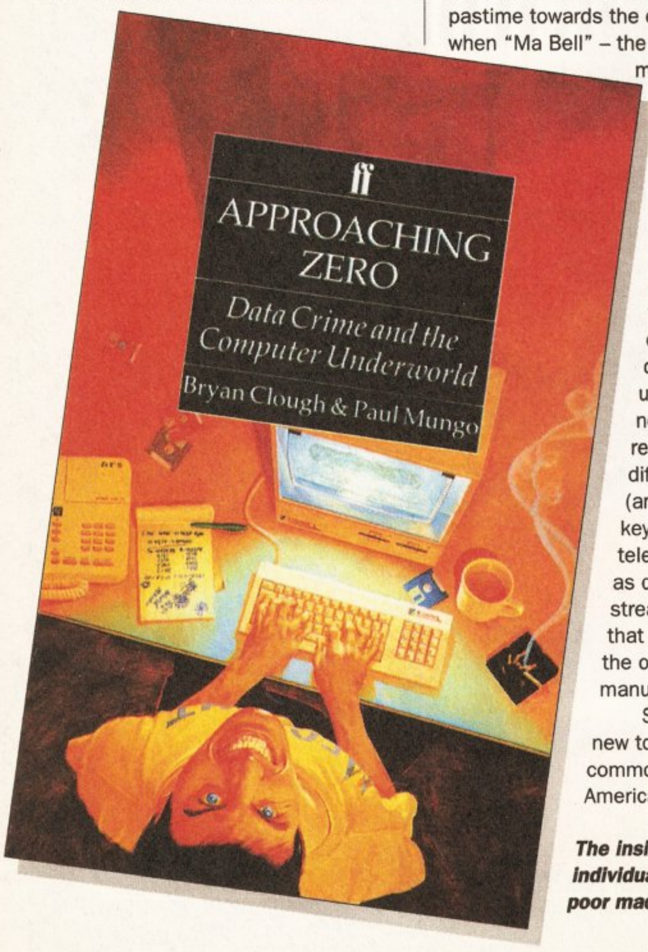
This book is likely to become the seminal work on this subject – required reading for everyone from security managers at large computer installations to psychology students who want an understanding of the Jekyll-and-Hyde personality of the high-tech criminal. Its style is concise and well-written, so it will also appeal to the casual reader who has a passing interest in the history of computer fraud.

PHREAKING THE PHONE COMPANIES

Approaching Zero starts by taking a look at "phreaking" – a term coined in the States in the late '50s for the first hackers who attacked the phone system to obtain free calls. When ingenious young men – hackers tend to be almost exclusively young and male – first employed their talents in this direction they found that the billing system could be switched off by a 2,600 Hertz tone (when the phone is hung up, the released line emits a tone at this frequency to signal that the call is finished). Armed with this information, phreakers found that they could get a free phone call just by whistling. Those phreakers without the ability to whistle in perfect pitch had to wait until the 1960s, when Quaker Oats gave away a cheap kiddies' whistle in a breakfast cereal that happened to produce a 2,600 Hertz tone.

Defrauding the US phone system became an even more popular pastime towards the end of the '60s when "Ma Bell" – the then-monopolistic Bell Telephone Company, now broken up into the "Baby Bells" – began updating their network to work by tone-dialling. Tone dialling is the use of musical notes to represent the different numbers (and function keys) on the telephone key pad, as distinct from the stream of clicks that were used with the older Strowger manual exchanges.

Soon after these new tones became commonplace, American phreakers discovered that they could duplicate the sounds using a device that became known as an "MF'er" – a multi-frequency tone generator. With these "MF'ers" or "Blue Boxes" (the first of these devices discovered by the phone company was in a blue box) phreakers could dial up 1-800 numbers – free numbers like the UK's 0800 ones – and then route calls anywhere in the world for nothing using the "MF'er" to provide the tone signals.



The inside story of sad individuals like this poor mad hacker...

The next generation of phreakers soon adopted more sophisticated methods of "attaching" the phone company as they discovered that it was possible to break into the exchange computers responsible for call routing and billing – "switches" as they are termed in the jargon. This turned out to be trivially easy – switches have spare lines, or service ports that are there to allow access to the system by telephone company engineers for running test and repair programs. Phreakers uncovered these numbers by a variety of techniques, the simplest being "dumpster diving" – scavenging through telephone exchange rubbish bins looking for discarded technical literature and printouts from test procedures. Other tricks in their armoury include "war dialling" and "social engineering". War dialling utilises the wonderful brute force skills of computers – simply program a computer attached to a modem to wade through all the permutations of phone numbers and keep a record of those that are answered by a computer tone. Social engineering requires the talents of the con artist, the "mark" being the person at the end of a phone line from whom you're trying to extract confidential information – such as unlisted dial-up numbers for an exchange switch.

Once a phreaker has gained access to a switch he can reprogram it for his own purposes. This was made easier by the fact that all of these switches were programmed in UNIX (a very user-friendly and well-documented operating system developed by AT&T, Ma Bell's parent company).

While phreaking may appear to some to be a relatively innocuous pastime – apart of course from the fraud that's being perpetrated on the phone company – the potential for disaster is enormous: just imagine a city deprived of the telephone for hours or even days – no emergency calls, nothing. In 1989 a hacker attached switches in three US cities – Atlanta, Georgia; Denver, Colorado; and Newark, New Jersey – and this apocalyptic vision almost came true. He had planted "logic bombs" (damaging programs set to "explode" on a particular date or when a certain instruction is processed) in the three switches. These were triggered to "detonate" on 4th July. Luckily they were tracked down and "defused" before the event – but only at significant cost. The companies had to deploy 42 senior technical staff working round-the-clock for five days checking the software on all the switches in the country.

HACKING INTO MAINFRAMES

One of the most common popular images of computer hacking comes from the '80s film *War Games*. Clough and Mungo firmly debunk these "film script scenarios", but the catalogue of real-life incidents that they report is almost as frightening.

When mainframe computers are shipped by the manufacturers, they come with passwords already set in the system software. Many users never bother to change these default settings, thereby leaving the machine vulnerable to anyone with access to the system literature. Even when passwords are changed they are often altered to names that an experienced hacker can quickly guess. The authors reveal that in London bank dealing rooms "Porsche" and "sex" are uncommonly popular. I used to access a large system (legitimately of course) on which System Manager status – the highest security level – could be obtained by typing "manager" at the ID prompt and "wolves" when the password was requested. The System Manager was a keen follower of Wolverhampton Wanderers Football Club.

Perhaps the most disturbing revelation in the book is the amazing security lapse that Digital Equipment made with the VMS operating system shipped with its VAX computers. Until 1986 it was possible to gain access to any VAX running VMS without even having to guess the correct identifiers. If an invalid ID was entered an error message would be

displayed – standard practice – but simply pressing Return would take the user on to the password prompt. Entering a wrong password would produce a further error message, but pressing Return would again bypass the security system, leaving the machine open to any user! VAX mainframes are widely used for the most sensitive military applications.

VIRUSES AND NASTIES

The problem of viruses is also dealt with in *Approaching Zero*. As with the other subjects in the book, Clough and Mungo manage to deal sensibly with the issues while avoiding the hype that fogs much of the media reporting of this important area.

The concept of computer viruses isn't new – it was first foreseen by John van Neumann, the "father" of the digital computer, back in 1948. He was interested in what was then thought of as electronically-created artificial life, which he called *automata*. There are now a number of differentiated terms for these automata – viruses, worms, trojans and bombs. The book makes clear the distinctions and then goes on to detail some of the most dramatic examples of viral attack.

Amiga Shopper Verdict: Simply the most comprehensive, best-written book available on hacking and its associated topics. If you want to be clued up on this important area, make sure you read it.

HISTORY OF THE AMIGA VIDEO

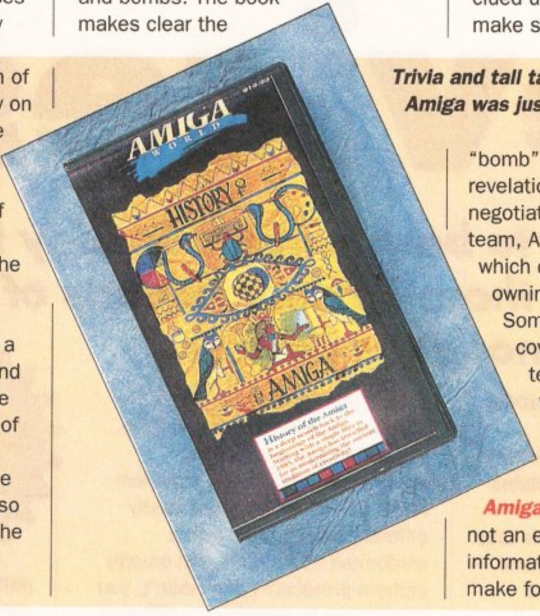
Price: £8.99
From: Burgess Video Group
☎ 0874 611633

The Burgess Video Group are currently marketing a range of videos about aspects of the Amiga and the applications which run on the machine. Many of these videos originate from the States, where the medium is a popular teaching tool. Indeed, this video was produced in conjunction with *Amiga World*, an American Amiga magazine.

This 45-minute video deals with the history surrounding the design of the original A500. Drawing heavily on "home movie" footage shot at the time, and largely narrated by those associated with the project, it provides an absorbing if somewhat superficial overview of the development of "Lorraine" – the design team's code name for the original Amiga.

History of the Amiga contains a variety of compelling anecdotes and snippets of trivia. For example, the name Amiga is the feminine form of the Spanish word for friend, "Amigo", so your computer's name actually means "girlfriend". It's also curious to learn that the idea for the "Guru meditation" messages was borrowed form the Apple Mac's "bomb" symbol. Interesting revelations are provided about the negotiations between the design team, Atari and Commodore as to which company would end up owning the rights to the machine.

Some of the less valuable tales cover which member of the team used to insist on wearing fluffy carpet slippers and who would bring their dog into the office.



Trivia and tall tales from the days when the Amiga was just a project called "Lorraine".

Amiga Shopper Verdict: There's not an enormous amount of information in the video, but it does make for an entertaining view.

PANDORA'S CD

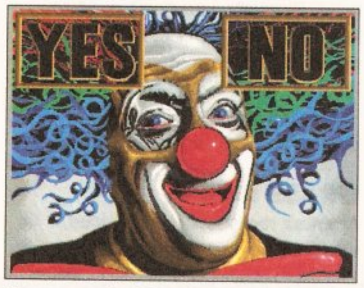
Price: £4.99
From: Optonica Ltd
☎ 0455 558282

If you've got either a CDTV or a CD ROM drive, then you really ought to splash out a fiver on *Pandora's CD* from Optonica. It is an excellent demonstration of the power and versatility of multimedia and features excerpts from a range of real-life applications. These include a point-of-sale demonstration from retailers Mega Mart; an interactive guide to the wonders of Milton Keynes; an audio-visual presentation on safety from the nuclear industry; an educational package titled *Exploring the Senses* and a counting program called *Play School*.

Now, while all of these demos are fun to play around with (*gasp* at the delights of Milton Keynes! *Smirk* at the demonstration of a geiger counter), the main benefit you'll derive from your £5 investment is the extensive library of clip art, photo images, textures and sound-effect samples supplied. These can all be freely distributed – so you can use them in your own programs, although you have to remember to give Optonica a copyright credit. The only thing that you can't do with the images and samples from the disc is bundle them up and distribute them as part of another collection.

The selection of clip art contains some 2,000 brushes, classified under 11 topics ranging from finance to food and science to sport. These are all stored in IFF form. On the CD you'll also find 100 diverse photo images – anything from a child riding on the back of a lion to soldiers marching. A further library provides you with a range of texture patterns, both natural and man-made, which make useful backgrounds for your own designs.

Finally, *Pandora's CD* contains a wide selection of sound-effect samples – some more realistic than others. Included is everything from car crashes to coins dropping and glass breaking to gun shots. These effects are stored in 8SVX IFF format.



The marvels of interactive multi-media: "Would you like a boiled sweet, little boy? Yes? No?"

Amiga Shopper Verdict: Two packages in one – an excellent tour of the flexibility of a range of multimedia applications, plus a generous bundle of useful clip art and sound samples – and all at a bargain price.

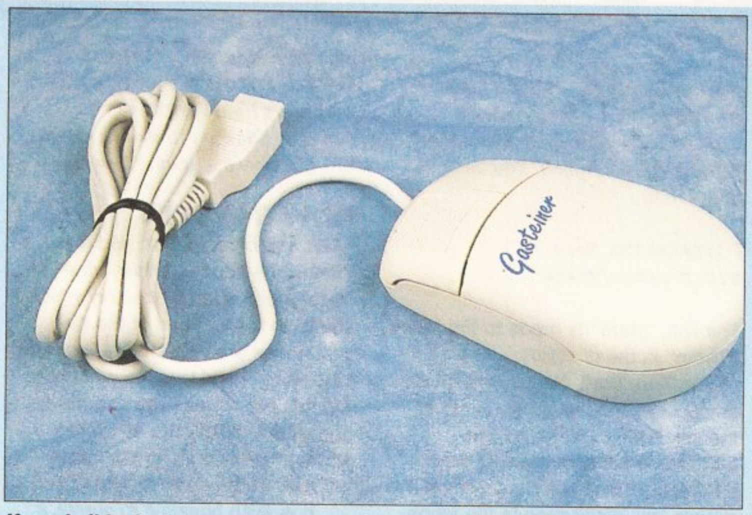
GASTEINER OPTO-MECHANICAL MOUSE

Price: £14.95
From: Gasteiner Technologies Ltd
☎ 081 365 1151

You know the mouse Commodore supplied with your Amiga? Well, have you ever thought that when you're using it you'd be a lot more comfortable if you were also equipped with square hands?

By any standards the ergonomics of the original Amiga mouse were poor – a brick with buttons seems a fair description – although the mice that are now shipped with the A1200 and A600 are a considerable improvement.

If you have found this a problem, or just felt like a change, then it's high time you considered getting a better mouse – and you may well find that a new mouse recently released by Gasteiner Technologies fits the bill exactly. It's shaped to fit comfortably in the palm of the hand, and the mouse buttons utilise micro-switches – which means that they are super-sensitive. The left button – the most frequently used – is larger than the right and has a ribbed texture, so you can feel when your finger is resting on it.

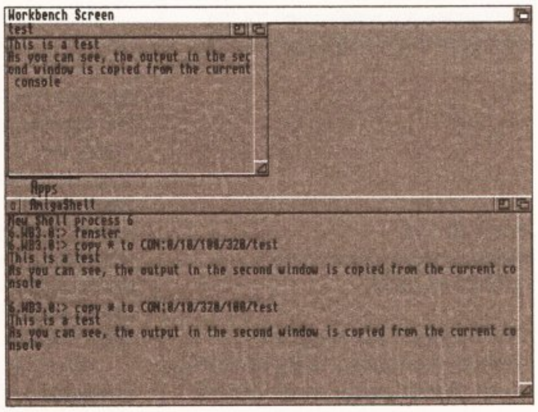


If you build a better mousetrap, somebody once said, the world will beat a path to your door. If you want a better mouse, go out and buy one. Simple.

Amiga Shopper Verdict: This isn't the cheapest mouse on the market – but you wouldn't expect it to be, because it's one of the best. AS

Dealing with devices

Getting back to basics, Mark Smiddy takes a close look at those devious aspects of AmigaDOS known as devices.



Copying text from the current console to a user-defined file – in this case, in fact, a window.

Much of the AmigaDOS literature you'll encounter will contain references to volume names, devices and possibly directory assignments too. This may apply to installation programs and file requesters: the Kickstart 2 standard file requester is a good example. It's confusing – so over the next two months, I'll be taking a look at the device interface from the ground up.

The basic syntax (or grammar) for any device is constructed from a name – one or more letters – followed by a colon (:). Here are a few possible examples: "MyDisk:", "Workbench 2.0:", "DEVS:", "PRT:", "DF0:" – the list could go on and on. Assignments, volumes and devices have one thing in common – they must all obey a rigid set of rules. We'll take a look at the mechanics of how that works shortly, but let's consider for a moment the reasoning behind this philosophy.

The easy answer is simplicity. How could you send some information to a printer, a modem and a file unless all these vastly different pieces of hardware conformed to a simple and broadly uniform protocol? If they didn't, you would have to memorise a different set of rules for each of the many different devices.

The same "byte" (piece of information) passes along a totally different hardware route to get to its destination. The byte sent to the modem is passed along, quite unmolested, to a special chip which slices it into eight little bits, then spits it out down two wires to the modem. The same byte, sent to the printer, is checked to see if it introduces a translation string and processed accordingly before being shoved down eight wires to the parallel printer. Finally, the byte sent to the disk drive is hacked into little bits and reassembled into a specially coded version (MFM) before being packed off to the disk drive along with 11,263 of its cousins – and all that goes down a high-speed serial link.

Note: the symbol ☛ in listings means *do not* type a return – the line is simply too long for our narrow columns

As you can see, there's a lot more going on under the hood than a casual glance might suggest. Devices provide the common ground that's easily accessible from user level. Similarly, you don't need to know where a file is stored on disk – or even in which directory it is located; all you need to know is that it is in the right place: logical directory assignments look after that.

GRASS ROOTS

At grass roots level, all devices, whether they be physical (some electronic interface) or logical (simulated in software), must support at least one of two (user-level) commands: **READ** or **WRITE**. To read from a device means you get something from it, whereas to write to a device means you send it something.

If this sounds obvious, consider that every time you type a letter in the Shell you are actually sending something to the console device (CON:) and the console is echoing the same thing back (writing to itself). The Shell in reality is a logical device based on an AmigaDOS process and an Intuition window. Intuition reads the input stream from the keyboard and converts that into keypresses. These are in turn read and interpreted by the Shell process and the appropriate actions taken. When you enter a command line and

AMIGADOS MASTERCLASS

Assignments are very handy if you want to access a directory deep in the hierarchy, but the convenience they offer comes at a price: the assignment has to be made every time you boot the machine. This doesn't matter too much if you can be bothered to edit the user-startup (or startup-sequence) but it does slow things down. Moreover, the assignment just adds to the already extensive list of directory assigns made by the machine and other software.

AmigaDOS release 2 provides a more manageable, and permanent, method which does not require the added effort of fiddling around with assigns. It also has the advantage that a single file, rather than a complete directory, can be made available. The system is called "linking" and is managed with the **MAKELINK** command. You can use it like this:

```
1>MAKELINK Here ☛
SYS:Foo/Bar/There
```

The link, **"Here"** is made to the file **"There"** in the directory **"SYS:/Foo/Bar"**. Now any software can access the file simply by using the link **"Here"**. As far as the software is concerned there is no difference, since the filing system returns the information in the same manner. Links appear in directory listings and "aware" file requesters, suffixed with **"<hl>"** to show that they are a hard link. It is not currently possible to read a link and find out where it goes, however.

HOW IT WORKS

When you create a link, you make a dummy file header (known as a link node) in the source directory which points to the location of the file. Link nodes are very small – just one block long – and there is no limit to the number of links you can have, provided that they are all on the same physical disk (or the same partition in the case of hard disks).

It is even possible to create a link to another link. In some cases this may be quicker than attempting to link to the original file. However, the new link belongs to the "real" file and not the other link. This avoids chains where one link leads to another and that leads to another and so on. It also means you can move the original file from the disk, but it can still be accessed via its link nodes.

Currently, although the operating system has provision for "soft links" which are links across volumes (for example, assigning to a different disk or a different partition on a hard disk) this is not supported by the filing system. No doubt this will be corrected in some future release.

press [Return], the command is handed over to a function in the AmigaDOS ROM library.

Now imagine you are loading a file from disk. Disk devices support **READ**, **WRITE** and extra commands such as **SEEK.** This allows AmigaDOS to locate any position in the file. For example, if a file is 1,000 bytes long, byte number 42 could be located with one **SEEK** command. The device driver (the software controlling the mechanism) is responsible for locating that particular byte no matter where it happens to be stored on the physical (or, for RAM disks, simulated) media. As far as the receiving software is concerned, the byte is returned just as if it were typed at the keyboard.

The Shell behaves like a very large buffered file. (If you understand such things, you can think of it as a database where every command line is a single record.) The file is opened when the Shell window opens, and closes when the Shell's window closes. From AmigaDOS 2 onwards, the Shell behaves more like a file and can be closed by entering an end-of-file or EOF character; more on that shortly.

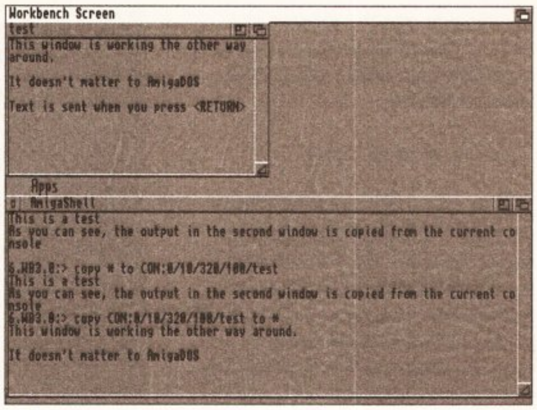
EASIER THAN YOU THINK

It's enough to make your brain itch – but that is precisely why devices are handled the way they are. Clever programming has removed all the complexities – enabling you to get on with everyday tasks in peace. All this theory may seem difficult to understand, but putting it into practice is very simple. In fact, you've probably already used some of the devices without even thinking about them. Consider the following example, which copies a group of files from the internal drive to the RAM disk:

```
1>COPY ☛
DF0:#? TO RAM:
```

This is actually a very complex call at device level – so we won't discuss the mechanics of it. The two devices are df0: (the internal drive) and RAM: (the RAM disk). Df0: is a physical piece of hardware managed by something called the "trackdisk" device. RAM:, on the other hand, is a simulated device driven by the RAM handler. As far as **copy** is concerned, the two devices are an input and output, or a source and a destination. Insofar as the devices are concerned df0: is being configured to **READ** and RAM: to **WRITE**.

You've probably never thought about it like that before, but it helps to understand how this works when



Reversing the process means simply copying text from a file (here again, a window) to the current console.

BEGINNERS BEGINNERS BEGINNERS BEGINNERS BEGINNERS BEGINNERS

BEGINNERS START HERE

What is a buffer?

In everyday English, the verb "to buffer" usually means to cushion, and a buffer is something to absorb an impact, like the large objects in railway termini that are there for runaway trains to hit so that they don't carry on into the high street. In computer science terms a buffer is a temporary storage area, and a more correct analogy would be a reservoir, or bucket if you prefer. (Computer blurb overflows with catchy jargon, but little of it bears much resemblance to the real world).

A buffer is a place where a device (or other software) stores information for later use. Buffers are encountered all over the place, but are most prevalent where information is being passed from a slow device to a faster one, or vice versa. Buffers are usually RAM-based, but other than physical speed, there is no reason why a disk drive could not be used instead. In fact, such "virtual memory" is sometimes used like this to buffer printer dumps – a topic best left for another time.

Buffers mainly come in two flavours: FIFO (or First In, First Out) and LIFO (or Last In, First Out – also called a stack). Of the two, devices use the FIFO buffer where the first item of information to be fed in is the first to come out the other end. It's a bit like a hosepipe, and in fact AmigaDOS features a special device called **PIPE:** which acts as if it were just that. Buffers are also used on the serial (**SER:**) and parallel (**PAR:**) ports as well as **CON:** but these are looked after entirely by the device handlers and are not user-controllable like **PIPE:**.

How big is a buffer?

How long is a piece of string? It depends entirely on the device being buffered; and some devices can have more than one buffer. Simple devices such as the keyboard can make do with a relatively small buffer – say 64 bytes. This figure presumes that you cannot type more than 64 characters faster than the application reading the keyboard can process them. It provides a "type-ahead" facility whereby you can keep typing even though the letters are not appearing on the terminal. While this should never happen in Shell windows, it may be seen on slower machines running heavy-duty document processing applications – *Wordworth* or *Pro Page*, for instance – where the software not only has to display the keyboard input (which is relatively simple) but needs to record it in a scalable font, say, and render it graphically (which is much more processor-intensive).

So what happens if the buffer does get filled?

The software is designed so that the sending device receives a message from the receiving device telling it to stop sending for a moment. Okay, that's a bit complicated, so imagine a car park in a busy city centre on a Saturday afternoon. As cars arrive the spaces are gradually taken and as cars leave more spaces become available to be filled by new arrivals. When the car park is full, the entrance barrier is closed and any new vehicles are made to wait. When cars leave, the magic-eye on the exit barrier signals the entrance barrier to open and allow just enough cars through to occupy the vacant spaces.

Does it always go that smoothly?

Usually, yes, but there are instances where the buffer can be filled and is never emptied. This only happens when a receiving device (such as a printer) is not available or not ready. In cases such as these the device driver (the software bit) has one of two options. First, it can warn the user of a "buffer full" condition – such as a requester stating "the printer is not responding" – or it can be more obtuse and simply flash the screen (keyboard buffer full). Secondly, it can wait and wait until hell freezes over or you abort the command. In this latter case the driver software tries to flush the buffer, although even that could fail in really dire circumstances. The actual options you will get depend entirely on the software device driver.

Why not just have more than one buffer?

It gets rather complicated when designers start to add not one but many buffers, each with a specified purpose. The disk drives (the real ones that is) are buffered at least twice. The first buffer, located in Chip RAM, loads an entire track of decoded MFM bytes via the Blitter. (This memory is allocated automatically by Kickstart at boot-up and can only be recovered by disabling the device. Now you know why every extra drive pinches some memory.) You can also add extra "cache" or "sector" buffers too. A cache is a store – like hidden treasure – which can be retrieved at any time.

The reason for these buffers is speed. Let's say it takes 120mS (0.12 of a second) to locate and load a given 512-byte sector from somewhere on the disk. Loading the same amount of information from RAM might take just 120µS (0.00012 seconds). These timings are given as guides only, but RAM is at least 1,000 times faster than the electro-mechanical process of reading a floppy disk. The idea, therefore, is to set aside a specific amount of memory to act as a sector store. Every time a sector is read from disk it is placed in the store (and an older one is flushed or "forgotten"). When a sector is requested the cache buffers are checked and if the sector is held there, the device gets it from there instead, only much faster.

It's worth pointing out at this stage that the AmigaDOS buffering system is not perfect. Intelligent buffering systems use cómplex algorithms to determine which sectors are in most use and to hold those; other sectors are read and thrown away. In such systems, directory blocks and commonly-accessed disk-based commands get stored, increasing the effective disk speed several hundred percent.

Interestingly enough, the latest Kickstart (version 3.0) has a new version of the FastFileSystem called DCFS or Directory Cache Filing System. This actually caches entries in the user directories (filenames etc) and improves performance of file requesters and so on significantly. DCFS is not backwardly compatible with earlier versions and should not be used when compatibility is an issue – something this author discovered after formatting the boot partition of a hard disk.

you come to use the devices at a more technical level. Here's a typical example where **COPY** replaces the **TYPE** command.

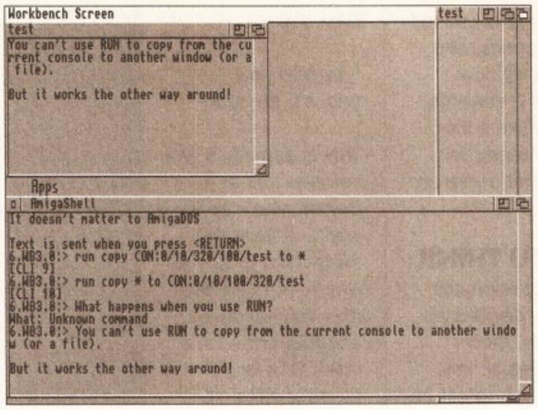
```
1>COPY S:SPAT TO *
```

Just as in the last example, **COPY** receives a source and destination argument. However, this time the source argument is a file and the destination "*" is read by AmigaDOS as the current console (Shell window). Users with AmigaDOS 1.3 can use a variation on this to add pattern matching to **TYPE** without needing **SPAT.** Here are the two instances using just the bare bones:

```
1>SPAT TYPE S:#?
1>COPY S:#? *
```

COPY is shorter, and because the pattern matching is part of the command, it is faster on disk-based systems. You will have to use the **SPAT** version if you want to take advantage of **TYPE**'s line numbering or hex dump facilities. Why?

The console CON: (and NEWCON: in 1.3) is an input and output device. It takes input from the keyboard and produces output in a window. Since the "*" literally means "the current console", it can also be used as a source. Enter the following command and type a few lines into the opened console window:



Attempting to combine the two procedures, copy FROM and copy TO, using RUN like this doesn't quite work. The FROM operation gets lost along the line...

```
1>COPY * TO RAM:Test
```

If everything went according to plan, you'll be sitting around waiting for something to happen and unable to get the prompt back. Don't panic – that's quite normal. This command opens a file and starts to send everything you type to it; and you cannot get the prompt back until the file is closed.

(At this point the curious among you might want to open another Shell via Workbench and monitor what's going on using **STATUS**. You will see the original process loaded with the **COPY** command showing that it's still running.)

In order to get the prompt back it is necessary to close the file. We do this by sending an "end-of-file" (**EOF**) character directly from the keyboard by typing **[CTRL-\]** (that is, hold the **[CTRL]** key down and press backslash). Once you have done that you can give yourself proof that the file is there by typing the following:

```
1>TYPE RAM:Test
```

Not that hard really, is it? Especially when you consider the amount of work that's going on under the surface. It's a bit like a swan gliding along majestically while under the surface it's paddling away like the clappers.

What you probably didn't notice in that last example is that **COPY** and the disk devices are buffered (see the Beginners panel if you don't know that this means). The buffer is flushed (written out to disk) when either (a) the buffer is filled or (b) the file is closed by an **EOF**. You can see this in action by write-enabling your Workbench disk and modifying the example above thus:

```
COPY * TO SYS:Test
```

You will hear the drive start up as the file is closed, or you type enough characters. Don't forget to close the file correctly and delete it from your Workbench disk before you finish the session, though.

Since the console is a device in its own right, you can use it directly too. This example shows how the console buffer works. It opens a window which you can type into and displays the output in the current Shell. As before, the "file" can be closed with **[CTRL-\]:**

```
COPY CON:0/0/100/320/☛
Test TO *
```

You can also view this using **TYPE** in the same way:

```
TYPE CON:0/0/100/320/☛
Test HEX
```

Once more, in both these examples we are reading from a device. Provided the device is available and supports read access, anything suitable will do. The first example here also works the other way around too, like this:

```
COPY * to ☛
CON:0/0/100/320/Test
```

Next month, we'll continue our discussion of the ins and outs of devices and volumes. **AS**

PEST 3 REVISITED

The more observant among you (or those more eager to try out absolutely everything on *Amiga Shopper* cover disks) may have noticed that *Pest*, as distributed on last month's cover disk, isn't quite in fully-working order.

To get it working you'll need to drop into Shell and enter the following:

```
1> CD SYS:Pest3
1> RENAME GetArgs S:GetArgs
1> RENAME SetPestEvent ☛
S:SetPestEvent
1> RENAME SetWaitEvent ☛
S:SetWaitEvent
```

This does not affect the operation of the program in any other way – but these programs *must* be in the **S:** directory or the current path. There are alternative solutions, but this is the best for now. If you managed to get *The Pest* working on your own, well done – if not, sorry for any inconvenience. On with the exposé:

A central part of *Pest 3* is its ability to interactively read a line of text from the user and return the result to another script. A deceptively short script achieves this with a minimum of fuss. **GetArgs** (listed below) works like this: you send it a variable name (or number) and it returns a local variable (**Arg<Name>**) containing the result. It is similar to the BASIC command:

```
LINE INPUT A$
```

For instance, the command **GetArgs Time** returns its result in **ArgTime**. The word "Arg" is appended to ensure there are no clashes with existing variables. The script operates with a recursive algorithm which is enough to make your brain itch until you get the hang of the idea. Here's how it works – but don't panic if you don't get the idea right away:

1. Defines the argument template with **ArgNum** required and two optional arguments: note ARG is Final (/F). We'll see their function shortly – but you might like to consider that this script will work equally well if **"LC"** were a switch (/S) by changing Line 5 slightly.

LISTING: READING USER INPUT

```
1. .key ArgNum/a,lc/K,Arg/F
2. .bra {
3. .ket }
4. if "{Arg}{lc}" EQ ""
5.  getargs >NIL: ArgNum={ArgNum} LC=ON
?
6. endif
```

Before you read the rest of this, try to predict why.

2-3. Redefines **BRA** and **KET** to my favourite versions.

4. Opens an **IF...ENDIF** construct to check if an argument has been supplied *or* the script is being run for the second time. If either is true, execution jumps to Step 6; otherwise it continues at Step 5.

5. This line recursively calls **GetArgs** again – the argument number is passed back (it's required) and **LC** (last chance) is turned on. **LC** could be a switch in the template in which case the **"=ON"** would not be required – either way works as well. More importantly, this command places the argument parser into interactive mode and sinks the argument template to **NIL:**. The result of this is to give the user somewhere to type without printing a useless message. Whatever the user then types is passed directly back to **ARG** in the second recursive invocation of **GetArgs**. Since this argument is Final, everything is passed into the argument, including any spaces.

6. Terminates the **IF...ENDIF** construct opened at Step 4. This line is only reached when the script has done one complete recursive loop.

7. Defines a local environmental variable **ARG<ArgNum>** with the value held by **Arg**. The script then terminates unless the script was called from within itself (Step 5), in which case execution resumes in effect at Step 6 in the original. And that's all there is to it!

SOFTWARE for free

This issue, Ian Wrigley goes for a bit of Fishing, then trawls through some programs and disk mags from as far away as Australia.

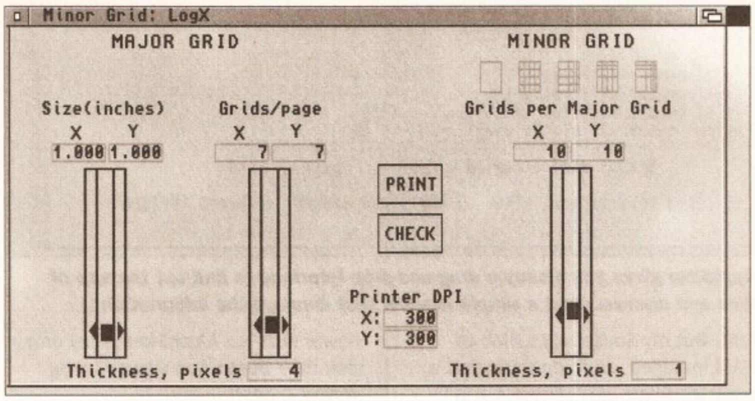
This month, we're putting Fish disks 851 to 860 under the spotlight (thanks to Anglia PD, as usual, for supplying them) as well as looking at the latest offerings that readers have sent in. These include a couple from Australia and New Zealand – it's good to know that *Amiga Shopper* is popular all over the world! If you've found any great PD or shareware that you think we should take a look at, just drop me a line – the address is on page 104.

GRAPHPAPER
Fish disk 851

This is another of those programs that leaves you thinking "why oh why?" It does its job perfectly well – it's just that the job itself seems... well, a little pointless. *GraphPaper* will, quite simply, create graph paper on your printer. You set things like how many "major grids" (thick lines) and "minor grids" (thin lines) should be printed on each sheet, the resolution of your printer, and how the minor grids should appear (normal, log x, log y, or log x and log y). You can set all the numerical values either by typing in to the requesters or by moving a slider – you can alter x and y values independently or together by dragging a centre slider, which is a neat idea. After you've set all the parameters (which can be saved as a "settings" file), hit the **Print** button and your graph paper will be output to whichever printer is selected in Preferences. There's even a **Check** button which makes sure that the selected values will print properly on one sheet of paper.

The only question, really, is... why? You can buy a pack of graph paper from any stationer's, and it'll probably cost you rather less than the time, electricity, printer ink/toner/whatever and paper that you'll use getting it right via your Amiga – especially since actually printing the graph can take some considerable time. If you're living in Outer Mongolia and can't find a WH Smith, Rymans or whatever, maybe *GraphPaper* might come in handy for you. Somehow, though, I think that the only real value the program has is that the source code is included – the program was written using the Aztec C compiler – so if you're beginning to program, you can see how the author (Bill Ames) did things like implement his sliders.

Program rating 6/10



GraphPaper, by Bill Ames: prints graph paper on your Amiga's printer. But why? So you can invent a kind of graph paper you can't get at Ryman's?

SINGLEFILE
Fish disk 851

Now here's a little $10 shareware utility that should prove useful to anyone with a hard drive. *SingleFile,* by Philip Dobranski, checks your drive (or any portion of it) for duplicate files. You know what happens: you put loads of programs from things like Fish disks on to your hard drive, and it quickly starts to fill up. But when you look a little more closely, you discover that you've got about a million copies of *MuchMore,* six of *LhA,* and so on and so on.

The solution to this is a program which checks your hard drive, looking for any files with duplicate names – and that's exactly what *SingleFile* does. It can check any portion of a drive, and will either list all duplicates to a window or save the details to a text file which you can examine later.

The only problem is that to check all the file and directory names, the program keeps a list of them all in memory – which meant that searching the whole of my 40Mb main hard drive partition was impossible, because the program kept stopping with a stack error. Of course, it's possible to check just a portion of your drive – you simply specify the root directory that you want to examine, and the program searches everything beyond that

---

BEGINNERS — BEGINNERS START HERE — BEGINNERS

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software or "freeware" is only one branch of this area; the other main one is shareware.

Essentially, freeware may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

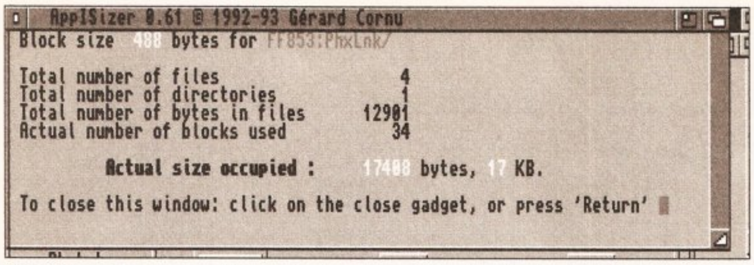
You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a "value for money" rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a "program rating", which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.



ApplSizer gives you a simple drag-and-drop interface to find out the size of files and drawers (and a simple window that displays the information).

root. But my Amiga's got 6Mb of RAM installed, and I do think that a program which can't check out a 40Mb drive (of which only about 20Mb is used at the moment) using that much memory needs some bug-fixing done to it. Still, keep an eye out for the next version…

Program rating 6/10

APPISIZER

Fish disk 853

This is another neat little utility – and this time, one that works perfectly. If you want to know how large a file or drawer is without resorting to all kinds of messing about, you need *ApplSizer*.

Double-click and an AppIcon is placed on the Workbench. To find the size of a file or drawer, you simply drag its icon over the *ApplSizer* icon and release the mouse button. Within a second or so, a window will appear with the object's vital statistics. Hit Return and the window disappears.

If it's small, elegant, useful utilities that you're after, *ApplSizer* is certainly one to be recommended.

Program rating 9/10

HYPER

Fish disk 853

This is a program which is designed for those people who don't have Commodore's *AmigaGuide* hypertext program. This is a utility which enables you to navigate through things like help documents via buttons – for example, the contents page of a document could have buttons marked "shareware agreement", "basic features", "reference manual" and so on; clicking on the button takes you to the requisite page. More and more "read me" files are being distributed in this format and, although they are readable using a standard text viewer such as *MuchMore*, they only look their best when viewed using *AmigaGuide*.

But now, for people like me who are still using Workbench 2.04 and so don't have access to the program, comes a solution: *Hyper*, which reads the *AmigaGuide* files and displays them correctly, along with buttons.

At least, that's what the author claims. Instead, about five seconds into viewing any file I get a program error, which means that I have to suspend the program or reboot the Amiga. Now, maybe I've got all sorts of strange stuff on my machine which is conflicting with *Hyper* – but somehow I doubt it. I've got a reasonably "vanilla" A500 Plus – specifically to avoid conflicts when reviewing software – and anything I've got running, most other shareware/PD fans will also have. So, it's reasonable to expect that the program will crash on them, too.

It's a shame, really – I was looking forward to being able to view *AmigaGuide* documents in all their glory. But until a bug-fixed version of *Hyper* is released, I guess it's back to *MuchMore*…

Program rating 0/10

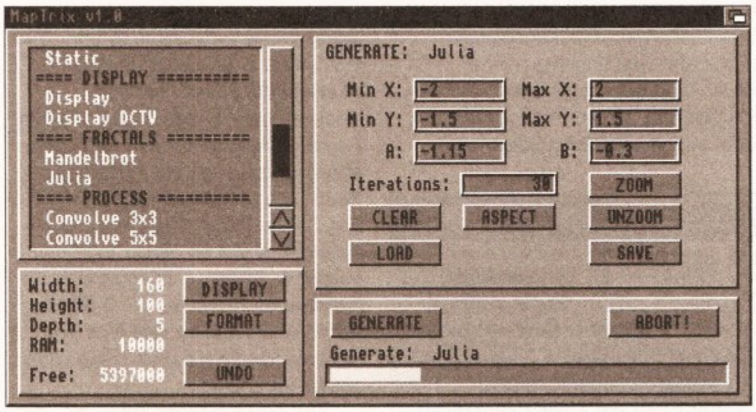
MAPTRIX

Fish disk 853

If you enjoyed *Amiga Shopper's* long-running series on fractals (it began back in issue 18) and want more of the same, this one's for you. *MapTrix* is a texture map/background generator with a large number of fractal effects such as wave synthesis, mountains and clouds. It also has image-processing tools such as convolutions, embossing and smoothing. The demonstration version on Fish disk 853 is limited to relatively small image sizes and can't create animated frames; for the full version, you need to send off your shareware fee of $25.

The program requires AmigaDos 2.04 or higher, and the author recommends at least 2Mb of RAM and a hard drive for the program to work at a reasonable rate.

The user interface is very attractive – it's nice to see that a lot of thought has gone into how to present all the program's features without confusing the user. There's a scrolling "function list" which displays the actual operations – both the basic generation of patterns and fractals (Mandelbrot and Julia sets) and the manipulation of images via features such as Emboss. Once you've clicked on a function, the main area of the display changes to show all the controls relevant to that function. At the bottom right of the screen is the "Info panel" which tells you things like how much RAM is required to generate the image, and at the bottom right is a progress bar which gives an indication of how long the program will take to create the image.



If you're a fan of fractals you already know what they look like, so these gadgets and things in MapTrix are going to be much more interesting, right?

When an image has been created, you can display it using the **Display** button and cycle through nine different colour palettes. When you've finished creating and manipulating your map or background, you can save it as an IFF image.

There really has been a lot of work put into this package. Even if you just want to display Mandelbrot and Julia patterns, it beats many of the dedicated programs available – it has, of course, a zoom feature for "burrowing" into the fractal. The range of manipulation functions is wide, and includes **Convolve** (3x3 and 5x5), **Ruffian** ("roughs up" the image) and **Emboss** (produces an "embossed" effect).

If you want to create attractive texture maps, this program is well worth getting hold of. And if you're writing a program which will give a user many different options, I'd urge you to get hold of a copy just to see how the author, Alex Deburie, has implemented one of the most elegant selection methods I've seen on the Amiga.

• If you missed any of *Amiga Shopper's* fractal series, from issue 18 to issue 27, turn to the *AS* back issue service on page 116.

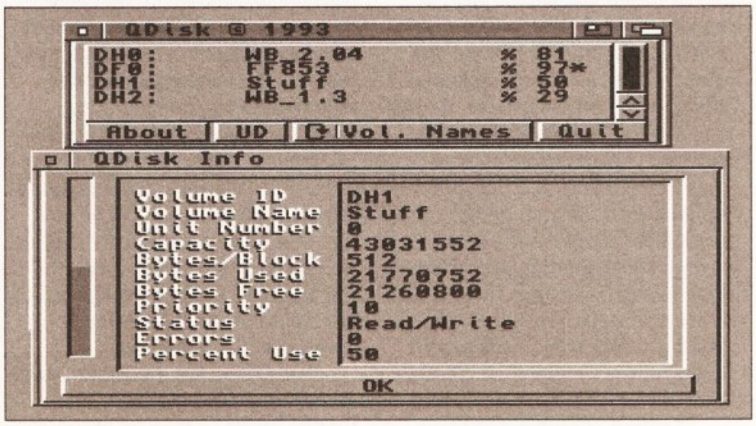
Program rating 9/10

QDISK

Fish disk 853

QDisk is another useful little utility in the mould of *ApplSizer*. Double-click on its icon and you are presented with a list of all the attached DOS volumes. The list gives the percentage of space used (or you can display the amount of free space left, if you prefer) and single-clicking on any volume produces a second window with more detailed information. True, a disk's

continued on page 107



QDisk gives you a clear and useful display of detailed information on any volumes – hard disks, floppies and so on – that are attached to your system.

GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed in these pages, or if you've got any comments or suggestions, write to Ian Wrigley c/o *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact Ian on cix as 'iwrigley', or on the internet as 'ian@vampire.demon.co.uk'.

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- U44 MAGNUM V1.4
- U45 SCREEN BLANKERS
- U46 LYAPUNOVIA V1.0
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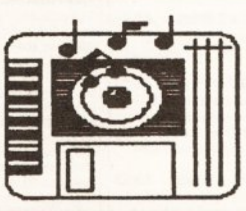
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Oh God! DiskMate may be powerful, but has the author ever heard of user-friendliness? Now I know how airline pilots feel looking at their instruments...

continued from page 104

Workbench window will give the amount of space used and the percentage free, but the information *QDisk* provides is far more accurate – down to the byte, in fact. It's small, it's fairly useful... it's staying on my hard drive.

Program rating 8/10

DISKMATE

Fish disk 854

I've looked at *DiskMate* before, but this is quite a major upgrade to previous versions. It's a multi-drive, multi-tasking disk copier, verifier, eraser and installer, which will handle both DOS and non-DOS disks. It's extremely powerful, has many features, and is one of the best of its kind – but the first thing that you'll want to do when you launch it is run screaming from the room. There are more buttons than you've ever seen in one place before, all crammed together, and there's no real rhyme or reason to the positioning of many of them. Okay, it must be tricky to fit so many different functions into a window as small as this – but how about increasing the size of the window?

Fortunately there's a reasonable on-line help feature, which scrolls text about any button that you click across the small progress display area. (Help, in case you can't even get that far, is accessed by clicking on the "question mark" button.) And once you've spent five minutes finding out what each of the gadgets does, you'll be pleased that you persevered. It really is an impressive program, and would rate the full ten out of ten if it weren't for the clutter. Even so, it's worth...

Program rating 9/10

DRAFU

Fish disk 854

DRAFU is short for *Draw A Function* and is – you've guessed it – yet another function drawing package. The version supplied is a demo/beta-test program, and can't save screen images or produce hard copy. Since there is at present no "final" version, according to the documentation, this could well be a problem for potential users – and that's a shame, since this really is one of the best programs of its type that I've seen.

Before you run the program, ensure that you've installed the library supplied – if you don't there's no descriptive error message, just a software error in a flashing orange box. Not particularly user-friendly. Once the library's installed, though, using the package is a joy.

The program understands a wide range of mathematical functions, and you can enter expressions which are just about as complex as you wish. Once you've created a few functions, you can save them as a "memo-pad" – rather than saving them individually, you save the whole collection. *DRAFU* supports a wide range of screen formats, including high-res and interlaced, so there's not likely to be a problem finding a display that suits whatever monitor you have, and you can specify the colour of the background, axes and plot line.

Functions can be drawn over each other for comparison – they are plotted in different colours – and you can either allow the program to select a reasonable range for the X and Y axes or enter your own. If you find that there's a particularly interesting portion of the function that you want to explore in more detail, there's even a Zoom option – draw out a rectangle on the screen and the functions will be re-plotted to reflect the new range.

If *DRAFU* had the ability to either print out the graphs that it creates or save them as IFFs, it would be great. As it is, it's a nice demo – but the fact that the authors haven't yet decided whether to make the final version shareware or commercial (or even if they'll release it at all) makes it a less appealing proposition.

Program rating 7/10

KEYCALL

Fish disk 855

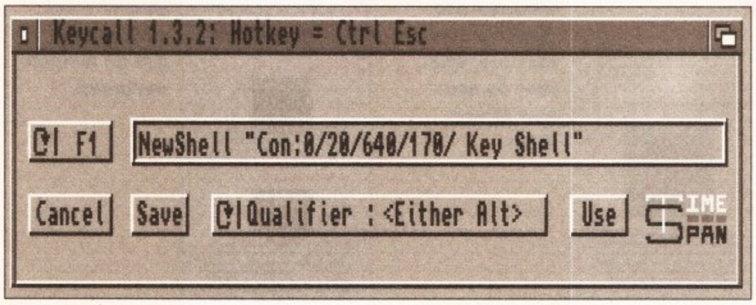
Keycall is an alternative to all the Tools menu addition programs and docking bars that every man and his dog seem to be writing these days. Its purpose is simple, but no less invaluable for that: with it, you can launch any program, or perform any DOS task, just by hitting a function key along with a modifier. For example, [Control]-F1 could create a new Shell, [Control]-F2 would launch *Protext*, [Control]-F3 and you're immediately in your C compiler... and so on.

The program is no problem to install: just drag it to your **WBStartup** folder and it will automatically run when you boot up. Or you can put it in the **c:** directory and invoke it from the startup-sequence, if you prefer.

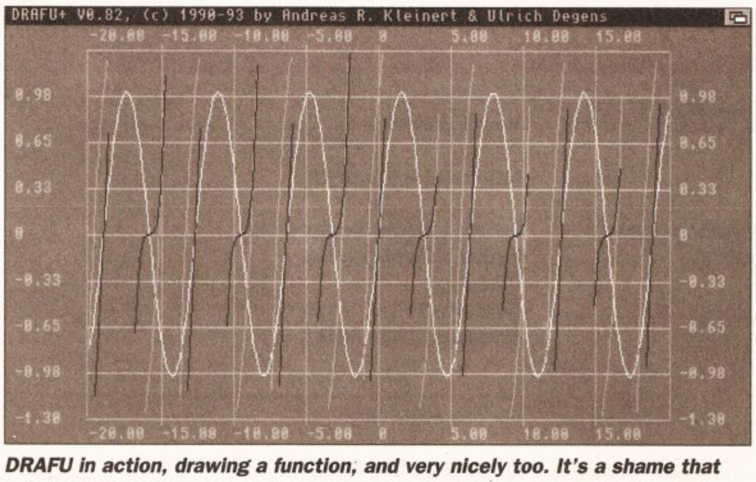
To configure, you just hit the [Control]-[Escape] hotkey to bring *Keycall's* window to the front. From there you can select the function key to configure, type in your commands, and select the modifier which must be pressed with the function key to invoke the command. These are the normal [Control] key, [Left Amiga] key, [Right Amiga] key and so on. Multiple commands from one key are supported – you just use the string **\n** to separate commands.

That's all there is to it, really. It's dead useful – no more going up to the Workbench menu, selecting **Execute Command...** and typing **Newshell** for me – I just [Control]-F1 and go. Oh, and the whole thing's less than 8K in size, so you don't have to worry about filling up your boot disk, either.

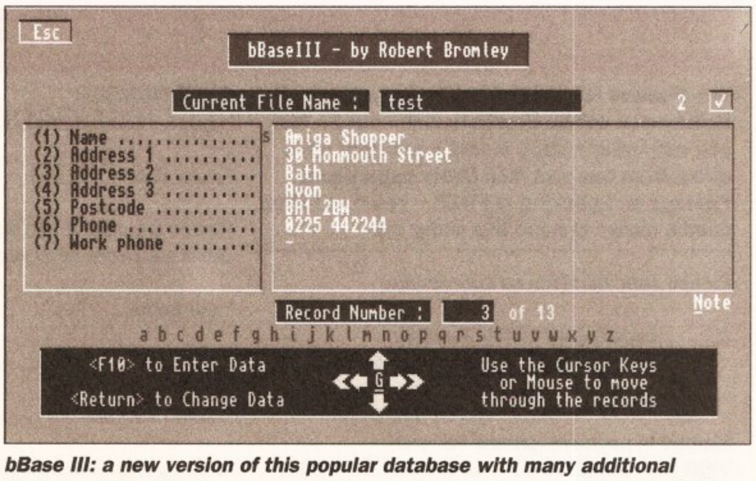
Program rating 10/10



Keycall: call up your favourite programs at the press of a function key. No more worrying about typing errors and wondering why a command won't work.



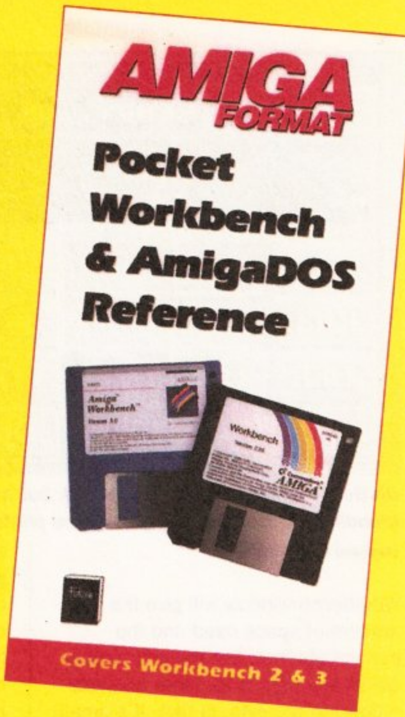
DRAFU in action, drawing a function, and very nicely too. It's a shame that this version won't let you save a screen or output the graphs to the printer.

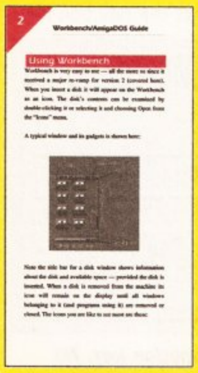


bBase III: a new version of this popular database with many additional features, but still not very much to boast about in the way of graphical frills.

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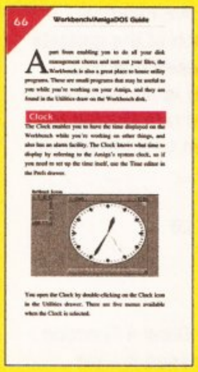




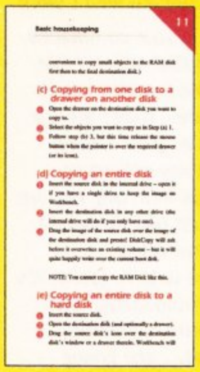
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BBASE III

Fish disk 860

A long time ago, I enthused about *bBase II,* a database program that actually did the job with no fuss, no mess and a fair amount of elegance. Now that program has been updated to version III, has become shareware and has had a vast number of extra features added.

The program on Fish disk 860 is a demo version – it can read databases of up to 600 records and save only up to 30 records. However, other than that it has no restrictions – so you can start to create your database while you're waiting for your shareware fee to be processed. The program requires about 800K of RAM to run if you have a reasonable-sized database – so it won't work if you only have 512K of RAM.

There are still some restrictions on the program – most annoying is that you can only have a maximum of nine fields per record. If that sounds like a reasonable number, consider an address book database with first name, last name, four address fields plus one for a postcode, two phone fields (home and work) – and that's your nine used up already. However, you can also choose to have a "notes" field, where you can store up to 16 lines of extra text for each record – so suddenly the field limitation isn't so bad. The database is limited to a maximum of 1,250 records or a file size of 310K, whichever comes first.

There are no real layout options either, but again this isn't too bad – *bBase III* isn't really designed to be an incredibly graphical animal, it's there simply to hold your data. On the other hand, there's a "tag records" feature (which enables you to mark a selection of records for printing, saving as a separate file or deleting), the ability to sort on any field, a fast search and many other options which make this a program well worth checking out. You can even encrypt a file so that users without the correct password can't access it. (Actually, it encrypts the file and saves it to disk; to access it you must give the password, whereupon the file is decoded and a "plain" version saved to the disk.)

If you're after a database with not too much in the way of graphical frills but powerful and easy to use, *bBase III* may be the one for you.

Program rating 9/10

MINTERM

Fish disk 560

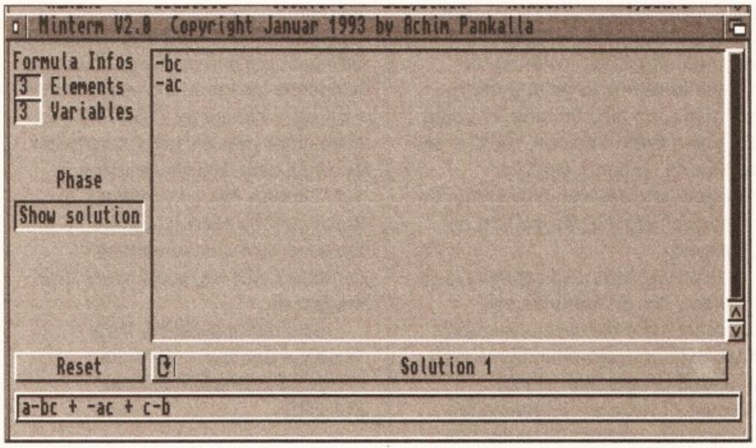
If Boolean algebra brings you out in cold sweats, *Minterm* will help you to sleep peacefully at night. It solves Boolean problems at the drop of a hat, and can deal with up to 15 different variables (provided that they're named a, b, c and so on).

The program can accept a formula either as a complete term, as an incomplete term, or as values from a logic table. Entering formulae is simple: the expression "NOT a AND b AND NOT c OR a AND b AND NOT c OR a AND b AND c", for example, is entered as "–ab–c + ab–c + abc", and a split second later the program comes back with "b–c + ab", or in other words "b AND NOT c OR a AND b". (If you've got no idea what I'm talking about by now, move on to the next review. This one's not for you.)

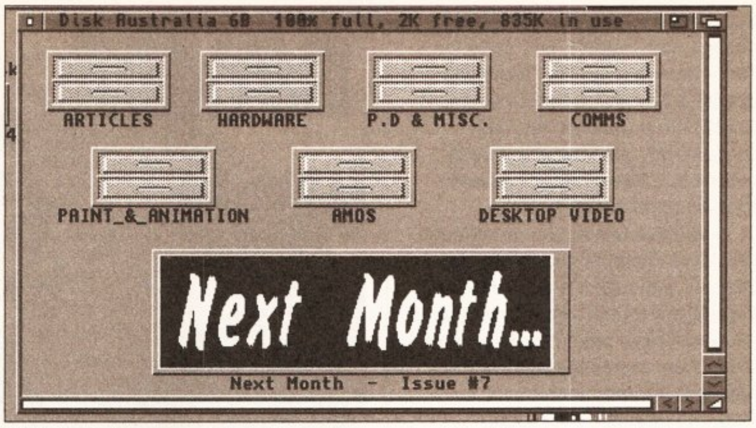
This in itself would be useful (if you need to solve such problems), but *Minterm* will also deal happily with the results of logic tables. For this, you must make sure that your table is in the right format (the documentation tells you what this is), and then enter the numbers of the table's rows that correspond to a "1" or TRUE output. Again, it only takes a second and the formula is produced that creates that logic table. Oh, if only I'd had this during my O-level Computer Studies course...

This is an elegant little program which does its task nicely. Even better, it's freeware. Recommended for maths and computer students and electronics nerds everywhere.

Program rating 8/10



Now you can sleep peacefully at night, secure in the knowledge that Minterm is taking care of your Boolean algebra homework – and getting it right...



Disk Australia: more tutorials, reviews and articles than you can shake a stick at, packed on to three disks. Bewdy, mate (I believe the expression is).

And now for something completely different... a selection of programs and disk magazines sent into the Amiga Shopper offices over the last month or two. Kicking off, we have:

DISK AUSTRALIA ISSUE 6

Disk Australia is a mammoth three-disk package, shipped in its own disk box, all the way from... Clapham. No, not really. This antipodean offering is full of articles on the three disks, as well as a virus checker (sadly, likely to be out of date by the time it's shipped), animations (the copy I received had Eric Schwartz's excellent *Skydive* on it), some PD, art, music, and even part one of an Australian holiday guide.

This really is a "magazine on a disk". Unlike many would-be disk magazines, which are just collections of shareware and PD linked by a menu, *Disk Australia* has articles on just about any subject you care to name – and they seem to be well written, too. (Although hey, guys – a headline like "Queensland – full of islands" isn't the most inspiring thing I've ever read!) Topics include software reviews, error codes, techie jargon, ANSI codes, C and Assembly language programming, how to compile a program, a *DPaint* tutorial... and on and on.

My only real complaint (and it's not really much of a gripe) is that the boot disk is disk B, not A. Why? On the other hand, you don't actually need to boot from the floppy at all, if you don't want – there's no slick animated intro here, just loads of solid info.

If you're looking for a disk magazine with plenty of information, rather than slick graphics, *Disk Australia* is well worth checking out. Its price (£20 for three months' subscription, £37 for six months') may seem a bit steep, but remember that you get at least three disks per month, in their own plastic disk box. If you just want one issue, it'll cost you £7.

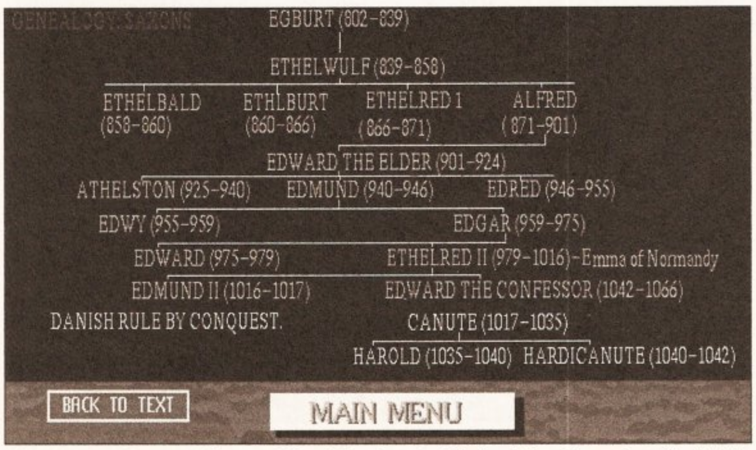
To subscribe, send your name and address, together with your credit card details (Access, Visa, MasterCard and Eurocard are accepted) or, if you really must, a cheque or postal order, to: Argyle Publishing, PO Box 418, Cowandilla, South Australia 5033, Australia.

Value for money 8/10

HISTORY OF ENGLAND 1

Licenseware, £4.50

History of England 1 is subtitled "Kings and Queens" and gives



Ah, the pre-Norman kings – Alfred the Great, Ethelred the Unready, Ethelbald the Tonsorially Challenged – now that's what I call the history of England!

details of all the British kings and queens, from Egbert right up to Liz Two – as well as some "incidental" people such as Phil the Greek and Chuck. It's a two-disk set, and contains not only text about each person but also a family tree and even some pictures.

I do have one or two complaints. (You'd be disappointed if I didn't.) First off, although it's a two-disk set, the two are totally separate programs – it would have been nice to be able to get from one to the other without having to actually double-click it. Also, the interface isn't totally consistent – there's a loading screen which requires you to press the space bar to continue on one disk that isn't present on the other. Given that these programs are presumably intended mostly for children, consistency is very important. However, that aside, most small kids are likely to be inclined to use their Amiga to learn about kings and queens more readily and enthusiastically than they are to read a textbook on the subject, and assuming you want your rug rat to know all about the monarchy, you could do worse than to get hold of this licenseware.

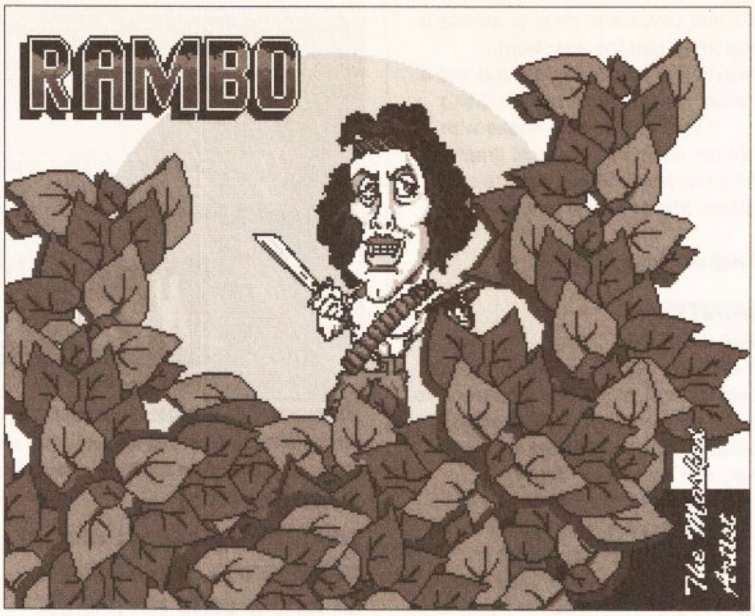
It's available from any CLR distributor, and was sent to us by Essex Computer Systems, 118 Middle Crockerford, Basildon, Essex SS16 4JA. The cost is £4.50 plus 75p postage and packing.

Value for money 7/10

MASKED ARTIST S/S

Masked Artist is an Amiga artist who has created this disk full of freeware cartoon illustrations, together with background music. The quality of the illustrations is extremely high, and the disk is well worth getting just to marvel that people can create this sort of stuff when you're stuck drawing boxes and circles with *DPaint*.

That's all there is to say, really – the whole slideshow lasts less than five minutes, but it's still well worth the £1.50 it costs. You can get the disk – and write to the Masked Artist – at Computer & Design Services, Dept PD, 24 Blackmoor Croft, Tile Cross, Birmingham B33 0PE. Ask for Masked Artist S/S, No. A-111.



Sly Stallone gets the Masked Artist treatment... The disk is an impressive demonstration of what you can do using Amiga art packages, and fun too.

Value for money 8/10

EASYCALC

Roberta Smith DTP disk BU108

EasyCalc is just about the best shareware spreadsheet I've seen running on the Amiga. Although it has limitations and isn't perfect, it's certainly perfectly usable for just about anything you might want to do – certainly at the small business or home use level. It's just £15, and is written by Yorkshireman Andrew Woods (although we won't hold that against him). Registration entitles you to a copy of the most up-to-date version of the program, free upgrades, a telephone hotline for problems, and support for something called "Dreamlink", which will enable plug-in modules such as a print spooler to be added.

Once you've launched it, you'll be amazed at how easy *EasyCalc* is to use. If you're used to spreadsheets on platforms like Windows or the Mac you'll have no trouble getting to grips with it – although the lack of scroll bars means that scrolling around the document may take some getting used to. (You scroll around by clicking on the left, right, top or bottom of the spreadsheet area. Many spreadsheet users will be used to this selecting the whole row or column.)

You enter data and formulae by just typing them in – a formula starts with an "=" sign. Unlike at least one other shareware spreadsheet, typing in text will automatically place that text in the cell – there's no need to signify that it's text with a quote mark or any other irritating protocol.

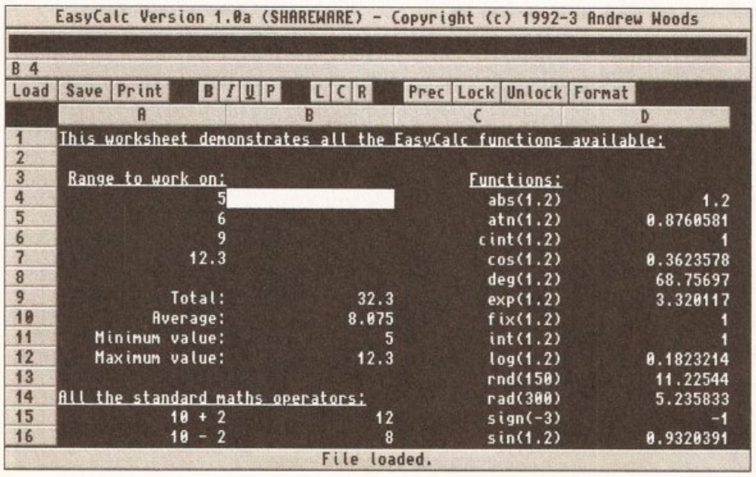
You can alter the size of columns either for one column or for the whole spreadsheet – you change the size of one column using the cursor left and right keys, so you can see the effect of the change as you make it. There's a small "toolbar" above the spreadsheet area which enables you to select typestyle – bold, italic, underline or plain – and alignment – left, right or centre – without the trouble of having to go to a menu, and there are also buttons for **Load, Save** and **Print.** You can "lock" a cell so that its contents can't be changed, and you can also select the number of decimal places that are displayed.

Inserting rows and columns is no problem, and all formulae cell references are retained – you don't have to go through altering them all to take this new column into account. If you copy a formula and paste it into another location, the cell references are automatically adjusted – so, for instance, you can total column A, copy and paste that formula to the bottom of column B and the figure will be the total of B. (This is called using "relative" cell references. If you want "absolute" references to be copied and pasted, you can do this too.)

The only real problem I found was that I couldn't get numbers to centre- or left-align – they insisted on sitting at the right of the column. Even with that complaint, though, this really is an excellent program. It's nice to see programmers deciding that their shareware should compete on equal terms with full commercial programs – too many programmers of things like spreadsheets and databases seem to think that just because they've hacked something together, they should immediately release it on an unsuspecting public, regardless of its inelegance or the presence of major bugs. The fact that Andrew offers phone support to registered users shows how confident he is of his program's stability – even a real masochist wouldn't do that unless he'd tested the program thoroughly!

All in all, this is a program that I can heartily recommend to anyone who wants a spreadsheet for the Amiga. You should certainly check it out if you're considering splashing out on a commercial package – you may well find that this does the job perfectly well.

Program rating 9/10



EasyCalc: easily the best shareware Amiga spreadsheet on the market – you may well find that you don't even need to look at commercial alternatives.

SCANNER ISSUE 13

Finally this month, I must mention *Scanner* – one of the most consistent disk magazines around. I've just been sent issue 13, which contains the usual selection of PD, reviews, articles, jokes and so on. The disk is controlled by a menu which loads on booting, and quitting most programs or the text viewer takes you back to that menu. The mag comes on two disks, so you get good value for money. And since we're now on issue 13, you can be fairly sure that it's not just a flash in the pan.

Scanner costs £3 per issue plus 50p postage and packing, or you can subscribe for the whole year for £18 – no extra charge for P & P. You can even order your annual subscription by credit card. It's well worth a subscription, too – I've been impressed by every issue I've received, which is something I certainly can't say about many disk magazines.

Scanner is available from Telescan Computer Services, Handsworth Road, Blackpool FY1 2RF.

Value for money 10/10

continued on page 112

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❑ !- **V635 IBeM EMULATOR v1.5** Is a CGA Colour IBM-PC Emulator written to run on any Amiga. Shareware version
❑ ^+> **V660 HOME MANAGER** is a great all in one address book with an inventory database & To-do list
❑ ^+ **V661 VERTEX** Create 3d objects without using the X, Y & Z views. Loads Sculpt 3d/4d & Turbo Silver.
❑ !- **V662 DCOPY v3.0 PRO** You can select the speed of the disk drive, Copy modes, Dos, Nibcopy, Ver & safecopy
❑ ^+ **V678 DRAW MAP v4.1 (2)** You can generate world maps in detail views.3d or 2d ❑ 2Mb or ❑ 1Mb
❑ ^+ **V681 GAME TAMER v2.2** Get a hold of that extra hard game & Cheat.
❑ ^+ **V684 FONT EDITOR v1.0,** Also contains other utilities. IFF Fonts
❑ ^+ **V685 ASTRO ASTROLOGY v3.0** Best Astrology program on the Amiga
❑ ^+ **V686 MULTIDOS v1.12** After this program has been installed your Amiga drives can then read 720k IBM Disks.
❑ ^+ **V688 MAGNETIC PAGES v1.30** Creates disk based magazines with graphics.
❑ ^* **V690 WB 2/3 UTILITES** Contains the programs that should have been with WB 2. Take full advantage of the many NEW capabilities that are available. **(2)**
❑ ^+ **V693 HARLEQUIN VIDEO ART & FONTS** A video production with excellent backgrounds & Fonts **(3)**
❑ ^+ **V698 AGRAPH v2.0** Brings the world a cheap draw Bar, Line, Area & Pie chart production/ presentation program.
❑ ^+ **V705 MED v3.21** Excellent update to the famous music program
❑ ^+ **V710 AREXX TUTORIAL** Includes several sample Arexx scripts & sample progs. ARexx comes free on all WB v2.04+ disks
❑ ^+ **V711 UNIX** Contains a working demo of Minix, A Unix workalike. Minix is system call campatable.
❑ ^+ **V715 COMPLETE BIBLE** With the entire text of the New Testament & Torah (Old Testament). 1Mb **(3)**
❑ ^+ **V718 SPECTRUM EMULATOR v1.4** Which is NOW!! 3 times faster.
❑ ^+ **V719 FREECOPY v1.8** Removes protected games copy protection so that the user can install them on HD.
❑ ^+ **V727 ART OF MED 2** Another excellent select of Med tunes.
❑ ^+ **V731 AMOSBROT v1.1a** More fractal types which include Logistic Equation, Coast lines & trees
❑ ^* **V732 WB v2.04+ UTILITIES** FPic DCopy, Boot Menu, Scenery, Huge.
❑ ^+ **V733 SOFTWARE LISTER v1.6** This program is designed to keep a track of your Software collection.
❑ ^+ **V742 ONLINE v1.4** Program will allow you to find cheats within games.
❑ ^+ **F691 PROFESSIONAL C MANUAL v3.0** Is the largest collection of utilities, documents & examples for C, It consists of six manuals, with over 40 chapters **(5)**
❑ ^+ **V757 AMIGADEX v1.61** Creates a card index database system.
❑ ^+ **V758 TEXTPLUS v4.0e** Another update of this excellent Word processor program. Requires Hard drive
❑ ^+ **V759 TEXT ENGINE v4.0** Updated version of the Word processor with **AZSPELL.** Excellent spell checker
❑ ^+ **V761 A-GENE v4.18** The latest version of the popular genealogy database program. By Mike Simpson
❑ ^+ **V770 ACCOUNT MASTER v2.12** Excellent Amos written program
❑ ^* **V773 WB v2.04 WINDOWBENCH v2.0** Excellent Workbench replacement for all WB v2.04+ Users **(2)**
❑ ^+ **V777 VOICE CLI v5.5** The idea is to control the CLI with your own voice.
❑ ^+ **V778 RAYSHADE v4.0** Complex Ray tracing package. 2Mb **(3)**
❑ ^+ **V782 FORMS** Create, Edit, Draw , Colour & print your own forms
❑ ^+ **V783 PROGRAMMING TOOLBOX** Many programs to help in your development efforts (most C but some in basic).
❑ ^+ **V784 AREXX (2)** disks which contain Arexx programs & examples
❑ ^+ **V786 PASCAL** This disk contains everything needed to program in Pascal. Includes a68k 68000 assembler & more.
❑ ^+ **V787 PROGRAMMER TOOLS** GadTools to design your user interface to your own programs using all of Amiga DOS 2.0+s new features. Also RegTools.
❑ ^+ **V790 ANIMATION UTLS** Includes CyroUtils for splitting, combining, and creating animations from IFF picture files.
❑X **V791 DIRECTORY ULTS** Highly recommended programs which are designed to make CLI & Shell tasks virtually obsolete.
❑ ^+ **V794 GRINDER** Complete graphic conversion package that supports GIF, JPeg, Atari St (Neochrome / Degas), PCX, Targa, TIFF, Ham-E and IFF Format pics.
❑ ^+ **V797 EASY AMOS PROGS (2)** Contain source code for use with Easy Amos.
❑ ^+ **V799 ADVENCED UTILs** SerNet & ParNet, Connect 2 Amiga & share resources via the serial / Parallel ports. My Menu Puts menus on your WB screen.
❑ ^+ **V801 100 PRO PAGE 3 FONTS** Theses fonts are for use with Pro Page & have be checked with the font converter which comes with your Pro Page3.
❑ ^* **V806 WB v2.04 UTILITIES (2)** 2nd collection of WB v2.04+ utilities that take advantage of the NEW capabilities.
❑ ^+ **V811 ELECTROCAD v1.42 & PRO TOYPER** Electronics drawing Programs.
❑ ^+ **V812 CANON** This disk contains Printer Drivers & Canon Studio, Gives better print output for any 9 pin printer.
❑ ^+ **V815 FILE & HD 2** DirWork v1.62 MegaD File copier like Disk Master **(2)**
❑ !- **V817 A500 PLUS EMULATOR** As it sounds will let v1.3 / v1.2 owners run WB v2.04+ software with out any need to purchase to WB v2.0+ chips.
❑ ^+ **V818 INSCRIPT v1.1** Produce video titles. Includes fully editable text entrys, Use IFF Pictures as back grounds
❑ ^+ **V820 BBBBS v5.7** Baud Bandit bulletin Board System Ftures include up to 99 file libraries, interface to extra devices
❑ ^+ **V821 SNOOPDOS v1.5** Monitors AmigaDos calls & allows you to see what library, devices, fonts are required.
❑ ^* **V822 BACKUP v3.77** A hard drive backup program that features, multi-drive support, full backup, compression.
❑ ^+ **V823 POWERPLAYER v3.9** Very powerful, user friendly module player. It can handle nearly all module formats can read PP modules & comes with it's own cruncher.
❑ ^+ **V826 AHDM v3.4** Hard Drive Menu. When placed in your startup-sequence, offers a 16 page menu, each page having upto 10 possible actions.
❑ ^+ **V827 REPAIR-IT: NewZap v3.3,** A multi sector file editing system. **FIXDISK v1.2,** Recover's as much as possible from a defective disk **DISKSALVE v1.42,** Creates a new file system structure on another device, with as much data salvaged from the original device.
❑ ^+ **V841 MODULA-2** Contains modula-2 language on the Amiga.
❑ ^+ **V842 SID v2.01** Sid can be used for various operations, The best is the file copier on the Amiga. Recommened
❑ ^+ **V844 DELITRACKER v1.3** Powerful & system friendly music player. Will play over 40 difference types of modules.
❑ ^+ **V845 Q.M.J v5.31** Generate julia sets & complex Quaternion Julia slices. Displays mandelbrots.
❑ ^+ **V846 SCOPIOUS MAPPER** An excellent Dungeon mapping program
❑ ^+ **V847 MONEY MANAGEMENT v1.01** Home accounts which allows you to keep track of upto 12 accounts
❑ ^+ **V848 SLIDESHOW GENERATOR v3.1** Creates slideshows of pictures in various formats for the amiga.
❑ ^+ **V850 FRAC v1.1** is a graphical Role playing game creator.
❑ ^+ **V856 PICTURE TOOLS** Converts Pictures to other formats and styles.
❑ ^+ **V857 POSTSCRIPTERS** Down loads Postscript Fonts for printing on standard Dot matrix printers.
❑ ^+ **V858 MUSIC MAKERS** A selection of programs to produce music productions. Make your own music
❑ ^+ **V859 AUDIO TOOLS (2)** Sound and Audio production utilities.
❑ ^+ **V861 3d DESIGNER** Various 3d graphic production utilities including CLight, DKBTrace and Surf.
❑ ^+ **V865 IMAGE PROCESSORS** Contains Tools to perform a wide variety of Image Techniques (IFF)
❑ ^+ **V866 MANDEL EXPLORER (2)** This is the best collection of Fractal Generating software on the Amiga.
❑ ^+ **V869 ANIMATION ASST (2)** Will solve many of your animation problems. Includes ABridge, Players, DA & AnimTools.
❑ ^+ **V871 3d HELPER** Are you starting out with 3d graphics. This is what you need.
❑ ^+ **V872 ICON TOOL KIT** Just about every tool you could imagine
❑ ^+ **V873 UGFC v1.1** Will help you translate between Graphic formats
❑ ^+ **V875 SPACE** Help you study, identify the Stars & celestial objects.
❑ ^+ **V876 SYSTEM TEST v4.1** Checks & reports on your computer
❑ ^+ **V879 BEAT DIS MODULES** For use with OctaMED includes a Player
❑ ^+ **V882 MAGNUM v1.4** Another excellent Disk Magazine Creator.
❑ ^+ **V888 TRONI CAD v1.0** The best CAD program for your Amiga.
❑ ^* **V896 TOOLMANAGER v2.0** Includes the ability to add menus to your Tools menu. add WB icons or Windows.
❑ ^+ **V899 ABACKUP v2.4** A Powerful backup utility that may be used for Hard Drive backup & File Archiving.
❑ ^* **V900 BOOTJOB v1.0** Include functions to store, install, view or execute any bootblock. Can save BB as executable files.
❑ ^* **V901 FIM v2.2** IntroMaker to create you own Intros. IFF imports
❑ ^+ **V921 COMPUGRAPHIC FONTS** Will work with DPaint v4.1, ProPage3, Pagestream, Pagesetter & Work bench v2.04+. About 30 Fonts **(3)**
❑ ^+ **V924 PLOT MAP v0.85** An extra for use with draw map v4.0 or v4.1
❑ ^+ **V925 SLAUGHTER CHEATS** Another selection of Hacks & Cheats
❑ ^+ **V928 THE LITTLE OFFICE** One of the best disks at the present time.
❑ ^+ **V936 LETTERS & BOILERPLATE** Letters for you to use as your own
❑ ^+ **V939 ANIM PB v1.2** Will show long sequences of animations or pictures fromn memory or disk.
❑ ^+ **V942 SCREEN BLANKERS** A disk packed with screen blankers. Includes the Twilight Zone blanker.
❑ ^+ **V943 LYAPUNOVIA v1.0** Mind-boggingly colourful program that makes pictures from a mathematical formula.
❑ ^+ **V945 PROPAGE 3 ENHANCER** Contains over 40 Genies for use with Pro Page 3.0, including useful ones like Make Pie Chart & others. Includes structured clipart for unique borders!
❑ ^* **V946 SYSTEM OPTIMIZER** KCommodity gives you memory meters, mouse/keyboard enhancements. REorg will optimize hard / floppy disks for big speed increase. HDMem virtual memory.
❑ ^+ **V947 GNUPLOT** Is a command driven interactive function plotter. Creates stunning plot/graphs of mathematical functions. Req HD & unpacks to 1.6Mb
❑ ^+ **V948 INTUITION BASED BENCH MARKS v5.5** A great package with all the popular BMs including Sieve, Dhrystone, Savage, IMath & Matrix
❑ ^+ **V949 TESTS** Contains all of the classic speed tests and system checks we could find. Includes CPU Speed, A full featured system diagnostic tool & more.
❑ ^+ **V950 GAME CONSTRUCTION** ADL is a programming language and run-time environment designed for the convenient writing of adventure games.
❑ ^+ **V951 PROTECTION** is a collection of utilities aimed to protect your data. Password protects autobooting HD's & Document File. Lock your data files with a passworded incription.
❑ ^+ **V952 x-BENCH v1.0** Complete solution to the replacement Workbench. Contains Degrader, LastHope, View, Virus Checker, Power packer and DCopy2
❑ ^+ **V957 TACKS v1.2** Help you create self-booting animation disks.
❑ ^+ **V958 CLUB LEAGUE** Is a utility that will allows you to edit and keep track of your divisons/leaggue stats.
❑ ^+ **V959 AMIGA_E v2.1b** Specific compiler. E is a powerful and flexible procedural programming language
❑ ^+ **V960 CLEO v1.0** Inplementation of a new experimental Pascal like language. Includes Complier and Source
❑ ^+ **V961 CPK v1.0** Render a space filling representations of atoms in mole cules. Handles 3dimensional spheres.
❑ ^* **V962 SUPER KILLERS v3.0 (2)** The latest Virus Killers like BootX v5.23a, which can save any bootblock and install it on another disk as well as check for viruses. VC v6.2 and VirusZ v3.2
❑ ^* **V976 WB v2.04 UTILITIES 6** Next collection of WB v2,04+ utilities.
❑ ^+ **V977 FILE & HD No 5-6** Next Excellent collect of HD utilities. **(2)**
❑ ^+ **V979 NCOMM v3.0** Is a communications program based on Comm v1.34 with lots of very nice enhancements
❑ ^* **V980 KICK v1.3** Will down grade A500+, A600, A1200 users machines to run software that would NOT normaly work. Turns them into a Workbench 1.3.
❑ ^+ **V983 MEGA CHEATS v3.0c** Now contains over 500 cheats. just Point & click at the game you want.
❑ ^+ **V984 PROTRACKER v3.0a** The latest updated version from Norway, Varios bugs fixed and about 70 new features, (To many to list them).
❑ ^+ **V988 ZIPBENCH v4.0** Another Workbench replacemant but contains excellent utilities like, powerpacker v2.2a, powerplayer, SysInfo, VirusX, Archiver, b-Base, BootIntro, Degrader, Fist Aid Box **(2)**
❑ ^+ **V994 THE MONEY PROGRAM v1.5** Features include upto a maxium of 60 accounts, upto 50 direct paymenys, keyboard short cuts. Contains documents
❑ ^+ **V1000 GRAPHPRO v1.0** Written with Amos professional by David Jordan. Basically this program takes a set of data, plots them on a graph.
❑ ^+ **V1001 VMORPH v2.0b** By Lee Wilkie will allow you to create smooth morphs/warps between two different images over a period of frames to create an animation. Requires 1Mb
❑ ^+ **V1002 RAMOS PRO FOR AMOS PRO** If you have Amos Pro then this disk make your programs Boot without having to use your Amos pro even time.
❑ ^* **V1003 NICKPREFS** Is an enhancement to WB 2/3 which adds 3 new preferences WBPicture, BuzyPionter & Floppy.
❑ ^^ **V1005 (AGA) UTILITIES** Is the first in a series of upcoming disks for the 1200 & 4000 Computers
❑ ^+ **V1009 TURBO TEXT v1.1** Excellent Word Processor. Very impressive version with all the features who would need.
❑ ^+ **V1013 POOLS PREDICTION TOOL2** Need another helping hand with the Pools then this is it.
❑ ^+ **V1016 OCTAMED v2.0** Music editor which was designed for making music for programs. (FULL & NEW VERSION)
❑ ^* **V1017 POST v1.86** An excellent Postscript interpreter for the Amiga which implements the full Adobe language **(3)**
❑ ^^ **V1021 (AGA) WB SCREENS** Enhance your Workbench backgrounds with theses nice full coloured pictures
❑ ^+ **V1022 LITTLE TRAVELLER v1.1** Shows a world map & you can select any country for travel information, Zooms up another close up map with more detail.
❑ ^+ **V1023 QUIZ** Contains Questions & Answers with the option to add
❑ ^^ **V1024 MANDELSQUARE v1.6** Program to generate enhanced AGA chip set Mandelbrot set images, requires an 020+ CPU & a numerical coprocessor. You can create 256 colour coloured pics
❑ ^* **V1025 TERM v3.1** Comm prgroam, Xpr transfer, filetype ident after download, cut & paste, point-and-click, auto upload/ download, VT102/VT220, Ansi emulation, powerfull phonebook & AGA support **(3)**
❑ ^* **V1034 ADM v1.01** Flexible address database with loads of great features.
❑ ^+ **V1035 FES BASIC** Just in time for all the new machines which do not have Basic with thier machines any more.
❑ ^* **V1037 (AGA) WB HACKS** An excellent collection of Utilities & Hacks
❑ ^+ **V1038 AMOS PRO UPDATER v1.11** 1st Update to the Amos Professional
❑ ^^ **V1039 WORKBENCH 3.0 INSTALL** If you need to install your A1200 hard disk then you need this.
❑ ^+ **V1040 bBASE III v1.1** An easy to use, versalite, yet full featured data base program. Greatly enhanced successor to bBASE II, Recommended
❑ ^+ **V1041 DIGITAIL BREADBOARD** Full digitail circuit simulator program
❑ ^* **V1043 SUPER DARK v1.5** A screen blanker like After dark from the MAC theres about 30 blankers.
❑ ^+ **V1044 FANCY PRINTING DISK** Contains banner print, Graph Paper v1.2 and Disk print v3.59.
❑ ^+ **V1045 uDRAW v1.0** Provides a mechanism for the rabid drawing of schematic diagrams. Bitmap oriented
❑ ^+ **V1046 THE XI RAVE SAMPLES** Grarett Watt's IFF 808 State samples
❑ ^+ **V1048 HAM-8 VISTAS (2)** Collection of Ham-8 Vista drawings
❑ ^+ **V1051 EASY CALC v1.0** A spread sheet designed to be both easy to use and fast. Built in excellent help system.
❑ ^+ **V1054 ADVANCED UTLS 2** Compress Disk doubles the capacity of your D on the fly with compressions Also DiskOptimizer, SCSI Mount and more.
❑ ^* **V1055 PARBENCH** All the software you need to hookup 2 Amiga's or CDTV's.
❑ ^+ **V1056 DEVELOPER** Contains the official Commodore developers Kit for the Amiga Guide & install utilities.
❑ ^+ **V1057 EDPLAYER** Music MOD player that looks, acts & plays like a CD
❑ ^+ **V1058 3D GRAPHICS** Several 3d moddeling/ray tracing programs
❑ ^+ **V1059 GRAPHICS** Create stunning graphical images. MPath creates swirling galaxy images. Roses, Rayshade
❑ ^+ **V1060 CIRCUIT BOARD DESIGN** Includes mCAD v1.26 and several terrific routines for the electronic enthusiast.
❑ ^+ **V1061 DISK UTLS** Several highly recommended programs for performing file hard drive backup, file recovery, disk track recovery, and forced disk validatuion
❑ ^+ **V1062 DESKTOP PUB**Transfers Macintosh screen fonts .AFM metric files to Amiga fonts/PPage .metric files.
❑ ^+ **V1063 RIPPERS, STRIPPERS & BEATS** For the music enthusiast, designed to strip music from your favorite games
❑ ^+ **V1067 3D OBJECTS 3** About 20 objects in Sculpt / Turbosilver format
❑ ^+ **V1069 PRINTER DRIVERS 5** Contains Deskjet 550c, 500, 500c, Ricoh HP1200 400dpi, Canon BJ300, 130, LPB, 10e, PJ1080a HP Paintjet.
❑ ^^ **V1070 (AGA) UTLs 2** Contains 256 colour icon editor, Plamsa256 and QuickGrab v1.1. Pure WB3.0 utls
❑ ^^ **V1071 (AGA) MSM v1.8** Martins system monitor for programmers
❑ ^^ **V1072 (AGA) WINBLENDER v39.28** Will create excellent/stunning AGA fractals. 68030/040/FPU versions.
❑ ^+ **V1073 FT-X ACCOUNTS v2.01** Was written as there are not ready any other good account packages.
❑ ^^ **V1074 (AGA) UTLS 3** Another excellent collection of utilities for AGA machines only. Contains System tests
❑ ^* **V1077 GENEALOGIST** Database for keeping track of genealogical information Upto 1000 per database
❑ ^+ **V1078 PC TASK v2.01** is a software IBM PC emulator which allows you to run the majority of IBM Software on your Amiga with no additional hardware. AGA machines can run VGA IBM Software. Shareware by Chris Hames
❑ ^+ **V1079 TYPING TRAINNER** An excellent program to help teach typing skills on your CBM Amiga

AMIGA GAMES

❑ ! - **1073 TETRIS ORIGINAL**This is the closest game to the original tetris
❑ ^+ **1420 DTRIS** If you want a1 or 2 player Tetris this has to be 1 of them.
❑ ^+ **1561 TRITWIS** Contains 1 player, 2 player & 3 Payer game options.
❑ ^+ **1977 POM POM GUNNER** Shoot down the incoming world wor II air planes in this Operation Wolf
❑ ! - **2018 JETMAN** ASpectrum classic converted to the amiga. It's JetPak with all the original sounds.
❑ ^+ **2022 SEA LANCE** The first Silent Service type sub war game on PD
❑ ^+ **2054 ATIC ATAC** A rendition of the game from the original Spectrum
❑ ^+ **2162 BATTLE OF BRITIAN WAR GAME 2** Strategy war games.
❑ ^+ **2164 DUNGEON ON NADROJ** This is the best Dungeons & Dragons
❑ ^+ **2220 STRATEGIC GAMES** Eternal Rome, Lords of Hosts, In Moonshine.
❑ ^+ **2221 MIND GAMES 21** of the best games to challenge your mind
❑ ^+ **2272 BLACK JACK LAB** Play all the popular versions of Pontoon
❑ ^+ **2278 CARD SHARP** A professionally presented selection of solitaire games.
❑ ^+ **2279 SUB ATTACK v1.0** Control the torpedoes & sink the enemy
❑ ^+ **2280 DIPLOMACY** Classic strategy game loosely based on World War 1. 2Mb
❑ ^+ **2396 PETERS QUEST** Is truly an excellent platform game for all ages.
❑ ^+ **2411 TOTAL WAR** Strategy world conquest type game. 1 or more players
❑ ^+ **2432 GOLDEN OLDIES** Galaga, Galaxians, Space invaders, Asteriods, Batty & Missle Command.
❑ ^+ **2436 DRAGON TILES** Mahjong is a ancient chinese game with coloured tiles
❑ ^+ **2447 COINDROP** Fruit Machine simulator with various gamble modes.
❑ ! - **2448 CRAZY SUE** Another first rate cute school girl platform game.
❑ ! -> **2450 SMASH TV** Simular to the arcade machine. Graphics & sound
❑ ^+> **2480 FRUIT MACHINE 2** As near as poss to the Arcade machines
❑ ^+ **2482 DESCENDER** Is a clone of the arcade, Tempest vectorized game
❑ ^+ **2483 INTRUDER** is a Multi level Berserk clone with smooth graphics.
❑ ^+ **2484 CATACOMB v1.7** Graphical Adv game set on a small island in the middle of the land of EXOUSIA
❑ ^+ **2485 IRON CLADS** (1Mb) Update to the excellent Strategic War Game **(2)**
❑ ^+ **2491 LEGEND OF LOTHIAN v1.02** An adventure game in the vein of Ultima.
❑ ^+ **2494 HUNCHBACK** This is a conversion of the old classic game.
❑ ^+ **2498 AMOS CRICKET** Excellent arcade cricket simulator with graphics.
❑ ^+ **2534 BATTLE CARS II** Get behind the wheel of a heavily armed car as you race round courses.2 players with the computer link
❑ ^+ **2535 SUPER PACK MAN 92** This is the best Pack man to date with super smooth scrolling & excellent graphics.
❑ ^+ **2613 DUAL** 2 player game where you control armoured tanks & rockets.
❑ ^+ **2614 TETREN** is a 1 or 2 player Tetris game. 2 player is Head 2 Head
❑ ^+ **2615 WAR** Strategy war game in which you control a fleet of space craft.
❑ ^+ **2617 GOLDEN OLDIES 2:** Croak, Excellent 1 or 2 player version of Frogger. BiPlanes is the most additive games we have played here 2 player only. TrailBlazer, C64 Classic, Scamble.
❑ ^+ **2620 DR MARIO** A Tetris like game where you move coloured pills down the screen. 3 in a row go's
❑ ^+ **2621 ETERNAL ROME** Start the roman Empire from 32BC. Build fleets, armies & send them into battle.
❑ ^+ **2622 DONKEY KONG** Original platform game in which you must rescue the girl. + Mad Bomber.
❑ !+ **2674 INTERPID** In the Artic ice you control a tank on a mission to rescue hostages in this superb Amiga origional
❑ ^+ **2676 MORIA v5.4** Loads of new features, better graphics, larger dungeons, screen updates, overview of dungon's map
❑ ^+ **2710 CLASH OF THE EMPIRES (2) v2.1** Strategical War game By T.A.Sear
❑ ^+ **2712 ACT OF WAR** Simular in style to the classic game Laser Squad. You control a team of special troops.
❑ ^+ **2715 TANK ATTACK** This is a 1-4 player version of the Classic Cartridge game Combat. 4 Joysticks can be used.
❑ ^+ **2716 RESCUE** Spaceship game simular to Scrample. Excellent graphics
❑ ! - **2721 E-TYPE II** Asteriods adv where you jet around collecting weapons
❑ ^+ **2723 SOLITAIRE** Popular card game on the amiga. Excellent version.
❑ ^+ **2724 NEIGHBOURS** This is the best graphical adventure game **(2)**
❑ ! - **2732 CYBERNETIX** Defender, Star Gate style game with super fast scrolling.
❑ ^+ **2738 AIR TRAFFIC CONTROL** Try to guide upto 100 planes into the AirPort
❑ ^+ **2775 ROULETE ROYAL** Why not do some gamble with chips at the casio
❑ ^+ **2778 SOCCER CARD** Truly a very simple Football Management game.
❑ !+ **2802 CARD-O-RAMA** Sea heven, Crib Klondike, Black-jack, Spades, Street .
❑ !+ **2803 PUZZLES** Gold, Dumbbell, Flying, CobraBunny,Get My Goat,Wordhai, Rmyca, Rabbit and much more.
❑ ^+ **2808 LADY BUG** Classic game simular to Pack man in style
❑ ^+ **2811 WIZZ WAR** Shoot with fire balls not fire power through unknown Lands.
❑ ^+ **2814 BULL RUN v1.3** This is one of the classic stratergy games.
❑ ^+ **2825 ALL ROUNDER** A Cricket simulation with great graphics & play
❑ ^+ **2842 CRAZY SUE II** Sequal to the all time best selling PD platform game.
❑ ^+ **2843 ROTON** 2 player but is very aditive for people you liked thrust.
❑ ^+ **2854 SPACE INVAIDERS II** A revised old classic Space Invaiders game.
❑ ^+ **2863 FIGHTING WARRIORS** A karate combat fighting contest game.
❑ ^+ **2876 ESCAPADE** Break bricks in a wall by hitting a ball with bat. Break Out
❑ ^+ **2932 NUMERIX** If you enjoy puzzle / Tetris then this is a must. You have a scrabble board & you must place tetris tiles around to get points.
❑ ^+ **2941 EXTREME VIOLENCE** Scrolls around much bigger than Smash TV
❑ ! - **2949 OBLIVION** Is the closest I have seen to the original defender
❑ ^+ **2987 BOMB JACKY** A conversion as the original but it's as the best yet
❑ ^+ **2988 BALDERS GROVE** its here Boulder dash with a selection of levels
❑ ^+ **2991 VEKTOR** Tron Light cycles game with excellent graphics, sound
❑ ^^ **3023 UCHESS (AGA)** Do you love chess then try this. 4Mb & WB 3.0
❑ ^+ **3037 SSW** Is a game for 2 based around Space Wars but with many extra features like Planets, Stars & systems
❑ ^+ **3038 TANK HUNTER** A 2 player Tank Attack game with various levels
❑ ^+ **3039 ASTEROIDS II v0.85** This is the best version of Asteroids i have ever seen, If you like Asteroids games
❑ ^^ **3040 TETRIS (AGA)** If you like tetris, you need this disk. AGA graphics.
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WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the downside, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There is a growing number of bulletin boards with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board or haven't got a modem, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses below. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between the companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and there are totally incompetent (dis)organisations which charge more than twice that.

UK PD HOUSES

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Deja Vu, 7 Hollinbrook, Beech Hill, Wigan WN6 7SG, ☎ 0942 495261.

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Essex Computer Systems, 118 Middle Crockerford, Basildon, Essex, SS16 4JA, ☎ 0268 553963.

***Express PD.** 47 Aberdale Road, West Knighton, Leicester LE2 6GD, ☎ 0533 887061.

George Thompson Services, Bridgegate Centre, Martinfield, Welwyn Garden City, Herts. AL7 1JG, ☎ 0707 391389.

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Langham PD. Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WV8 1PL.

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Numero Uno. Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP, ☎ 0262 671125.

Orbital Software. Contact A Flowers, 37 The Orchard, Market Deeping, Peterborough, Cambs. PE8 8JR, ☎ 0778 342064.

Pathfinder PD, 41 Marion Street, Bingley, W Yorks. BD16 4NQ, ☎ 0274 565205.

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Tazmania PD. Contact M Hewson, 4 Boultham Avenue, Lincoln LN5 7XZ, ☎ 0522 538706 (after 6 pm).

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When you write for a catalogue, include an SAE for its return. Some libraries ask that you send a blank disk as well.

If a library is named in a review, this means that that library provided us with the disk reviewed. Given that PD can be freely copied, the same program may well be available legitimately from several libraries.

• If you run a PD library not listed here and wish to be included, or if you want to amend any information given, send full details and a copy of your latest catalogue to:
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Std 32-bit RAM	1Mb	4Mb	4Mb	4Mb
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PRICE	£399 INC VAT UPG 0110	£699 INC VAT UPG 0430	£999 INC VAT UPG 0533	£1299 INC VAT UPG 0740

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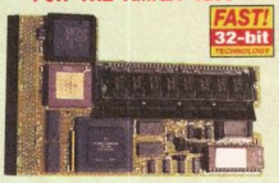
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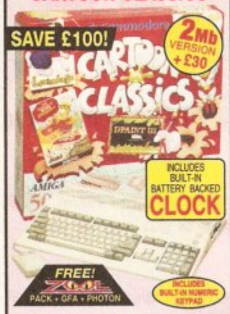
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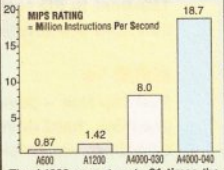
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6Mb RAM	540Mb HD 10.5ms	£1699	INC VAT AMB 3540

25MHz 68040

RAM	HD	Price	Code
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Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. It may not include each and every product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but you can rest assured that all major brands and models are here. The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it accordingly. This month we bring you a guide to hardware for the Amiga owner. Next month: software.

AMIGAS

Model	Price	Memory	Total Chip	Total Fast	Processor	Speed (MHz)	Hard Disk (Mb)	Floppies	Comment
A500 Plus	£199	1 Mb	2 Mb	9Mb	68000	7	No	1x880k	Discontinued, but still available from retail outlets
A600	£199	1 Mb	2 Mb	4 Mb	68000	7	No	1x880k	Replacement for now-discontinued A500 Plus
A600HD	£499	1 Mb	2 Mb	4 Mb	68000	7	20	1x880k	A600 with built-in 20Mb IDE
A3000	£1,300	2 Mb	2 Mb	16 Mb	68030	16/25	50/100	1x880k	Available in several hard disk/processor configurations
A1200	£399	2 Mb	2 Mb	8 Mb	68020	14.2	No	1x880k	Latest Amiga fitted with AGA
A4000-030	£999	2 Mb	2 Mb	16 Mb	68030	25	80/120	1x1.76Mb	Successor to the A1500/A2000
A4000-040	£2,000	6 Mb	2 Mb	16 Mb	68040	25	120	1x1.76	Flagship of Amiga range

HARD DRIVES

Model	Supplier	Price	Machine	Capacity (Mb)	RAM Expansion	Rating	Issue
500XP	Surface UK	£489	A500	40	2/8 Mb	****	1,2,8,13
A590	Commodore	£399	A500	20	2 Mb	***	1,2,8,13
DataFlyer500	Trilogic	£350	A500	48	–	**	1,2,8,13
FastTrak	Third Coast	£599	A500	40	–	***	8
Impact II+	Silica	£399	A500	50/110	8 Mb	*****	1,2,8,13
Novia 30i	Power Computing	£399	A500	20/30	–	***	8
Prima	Power Computing	£499	A500	50/100	–	****	8
Protar HD	Protar	£299	A500	20	8 Mb	N/A	–
RocHard	Zye Technology	£379	A500	52	8 Mb	****	13
Trumpcard	Third Coast	£399	A500*	40	–	***	8
A2091-40	Commodore	£200	A1500→	40	–	**	8,13
DataFlyer2000	Trilogic	£350	A1500→	48	–	***	1,2
Impact IIHC+8	Silica	£299	A1500→	40-300	8 Mb	****	1,2,13
Nexus HC	Power Computing	£350	A1500→	40	8 Mb	****	8,13
WordSync2000	Surface UK	£450	A1500→	52	–	****	1,13
OpticalDrive	Power Computing	£1,199	SCSI	128	–	N/A	–
SysQuest	Omega Projects	£690	SCSI	88	–	****	8
TapeStreamer	Omega Projects	£600	SCSI	150	–	N/A	–

Note: Trumpcard can be used on both A500 and A1500

EXTERNAL DRIVES

Model	Supplier	Price	Machine	Size	Capacity	Disable Switch	Rating	Issue
3A-1D	Golden Image	£65	Any	3.5 inch	880K	Yes	****	0,8
A1011	Commodore	£100	Any	3.5 inch	880K	No	***	0,1,2,8
AEHD	Applied Engineering	£140	Any	3.5 inch	1.52 Mb	No	*****	8
CAX354	Cumana	£75	Any	3.5 inch	880K	Yes	****	0,1,2,8
DualDrive	Power Computing	£120	Any	3.5 inch	2x880K	Yes	****	0,1,2,8
Floptical Disk	Digital Micronics	£650	Any	3.5 inch	20 Mb	Yes	*****	8
PC880B	Power Computing	£55	Any	3.5 inch	880K	Yes	*****	8
RF332C	Silica Systems	£60	Any	3.5 inch	880K	Yes	****	0,1,2,8
RF542C	Silica Systems	£80	Any	5.25 inch	880K	Yes	****	0,1,2,8
Zydec	Evesham Micros	£55	Any	3.5 inch	880K	Yes	***	8
Internal2000	Power Computing	£50	A1500→	3.5 inch	880K	No	****	8

***Note:* PC880B comes with built-in disk copier. Enquire about availability of the Floptical Disk.**

RAM EXPANSIONS

Model	Supplier	Price	Machine	Size	Max Size	Power Supply?	Fitting	Rating	Issue
500RX	Surface UK	£198	A500	2 Mb	8 Mb	Optional	Expansion Bus	*****	5
AD501	Ashcom	£21	A500	512K	512K	No	TrapDoor	*****	24
Addax	Ashcom	£125	A500	2 Mb	8 Mb	No	Expan Bus	****	24
Ashcom1.8Mb	Ashcom	£155	A500	1.8 Mb	–	No	TrapDoor	N/A	–
Ashcom512k	Ashcom	£35	A500	512k	–	No	TrapDoor	****	8
PC501	Power Computing	£30	A500	512K	512K	No	TrapDoor	****	24
Power 8 Mb	Power Computing	£109	A500	2 Mb	8 Mb	No	Expan Bus	*****	24
ProRAM Plus	Datel	£25	A500	512k	–	No	TrapDoor	***	8
ProRAM501	WTS Electronics	£19	A500	512K	512K	No	TrapDoor	****	24
RAM-Master 2	Datel	£100	A500	1.5 Mb	–	No	TrapDoor	N/A	–
V2000	Virgo	£104	A500	2 Mb	–	No	TrapDoor	N/A	–
Zydec1.5	Zydec	£79	A500	1.5 Mb	–	No	TrapDoor	N/A	–
ProAgnus	WTS Electronics	£139	A500/2000	1 Mb	Chip Ram Exp	No	Internal	****	24
PC501+	Power Computing	£36	A500 Plus	1 Mb	1 Mb	No	TrapDoor	*****	24
AX601	Ashcom	£45	A600	1 Mb	1 Mb	No	TrapDoor	****	24
AmiTek600	Silica Systems	£45	A600	1 Mb	1 Mb	No	TrapDoor	****	24
PC601	Power Computing	£40	A600	1 Mb	1 Mb	No	TrapDoor	*****	24
ProRAM601	WTS Electronics	£38	A600	1 Mb	1 Mb	No	TrapDoor	*****	24
A2058	Commodore	£150	A1500→	2 Mb	8 Mb	No	Zorro	****	24
Aries2000	Power Computing	£129	A1500→	2 Mb	8 Mb	No	Zorro	*****	24
A2058	Commodore	£159	A1500→	2 Mb	8 Mb	No	Card	****	8
AdRAM2000	Power Computing	£179	A1500→	2 Mb	8 Mb	No	Card	****	8
GVP Series2	Silica	£159	A1500→	2 Mb	8 Mb	No	Card	N/A	–
HD8+	Silica Systems	£150	A150→	0 Mb	8 Mb	No	Zorro	*****	24

PROCESSOR ACCELERATORS

Model	Supplier	Price	Machine	Processor	Speed	Max 32-bit RAM	Maths Co-pro	Rating	Issue
38 Special	Omega Projects	£850	Any	68030	38 MHz	8 Mb	68881	****	13
040/500	Power Computing	£725	A500	68040	28 MHz	8 Mb	68882	*****	14
A1230	Silica	£299	A1200	68030	40 MHz	32 Mb	68882	*****	27

PRODUCT LOCATOR

PRODUCT LOCATOR

G-Force 030	Silica	£699	A1500	68030	40 MHz	4 Mb	68882	****	27
A5000-16	Solid State	£295	A500	68020	16 MHz	4 Mb	Yes	N/A	–
A530	GVP/Silica	£800	A500	68030	40MHz	8 Mb	68882	*****	20
AdSpeed	Silica	£173	A500	68000-16	16 MHz	–	No	****	3,5
B5000-25	Solid State	£595	A500	68020	25 MHz	16 Mb	Yes	****	3,5
CSA MegaMidget	Bytes&Pieces	£389	A500	68030	33 MHz	8 Mb	Yes	****	3,5
Turbo68000	Bytes&Pieces	£45	A500	68000-16	16 MHz	–	No	N/A	–
VXL-30	ZCL Ltd	£409	A500	68030	25 MHz	8 Mb	Yes	N/A	–
CSA Rocket Launcher	Omega Products	£549	A1500	68030	50MHz	–	68882	*****	20
G-Force	Silica	£599	A1500	68030	25 MHz	16 Mb	68881	****	15
2000/40	Marcam	£1,937	A1500→	68040	50 MHz	32 Mb	Yes	N/A	–
40/4 Magnum	Omega Projects	£NA	A1500→	68040	28 MHz	16 Mb	68882	*****	13
A2630	Commodore	£1,200	A1500→	68030	25 MHz	4 Mb	Yes	N/A	–
A3001	Silica	£1,799	A1500→	68030	50 MHz	32 Mb	Yes	*****	3,5
B5000-40	Solid State	£1,162	A1500→	68030	40 MHz	32 Mb	Yes	N/A	–
FusionForty	Power Computing	£1,999	A1500→	68040	50 MHz	32 Mb	Yes	N/A	–
Harms Pro30	Bytes&Pieces	£1,099	A1500→	68030	28 MHz	4 Mb	Yes	***	3,5
Zeus	Power Computing	£1,449	A1500→	68040	28 MHz	64 Mb	68882	*****	14
CBM 040 Card	Commodore	£NA	A3000	68040	40MHz	NA	Yes	*****	20
G-Force	Silica	£1,999	A3000	68040	28 MHz	–	–	N/A	–
Mercury	Power Computing	£1,249	A3000	68040	28 MHz	32 Mb	68882	*****	14

Note: Although some 68030 cards appear to run faster than their '040 equivalents, this may not necessarily be the case. All '040 cards will run faster internally.

SCANNERS

Model	Supplier	Price	Machine	Type	Colour	Resolution	Rating	Issue
AlfaScan	Golden Image	£199	Any	Hand Held	No	400dpi	*****	14, 22
DaataScan 2GS	Pandaal	£125	Any	Hand Held	No	400dpi	***	14, 22
GT-6000	Epson UK	£1300	Any	Flatbed	Yes	600dpi	*****	17
GeniScan	Datel	£130	Any	Hand Held	No	400dpi	N/A	–
GoldenImage	GoldenImage	£150	Any	Hand Held	No	400dpi	*****	5
Handy Scanner	Pandaal	£140	Any	Hand Held	No	400dpi	***	14
Pandaal Scanner	Pandaal	£180	Any	Hand Held	No	400dpi	****	3
Power Scanner 2	Power Computing	£99	Any	Hand Held	No	400dpi	*****	14
Powerscan Colour	Power Computing	£239	Any	Hand Held	Yes	400dpi	***	23
Sharp JX-100	Silica	£695	Any	Hand Held	Yes	200dpi	N/A	–
Sharp JX-300	Silica	£3600	Any	FlatBed	Yes	300dpi	N/A	–

DIGITISERS

Model	Supplier	Price	Realtime	Colour	Realtime Colour	Animation	Rating	Issue
ColourPic	JCL	£399	Yes	Yes	Yes	No	****	2
ColourPic Plus	JCL	£699	Yes	Yes	Yes	Yes	****	22
DigiTiger II	SA&H	£200	No	Yes	No	No	****	17
DigiView 4	Silica	£150	No	Yes	No	No	N/A	–
FrameGrabber	Marcam	£599	Yes	Yes	Yes	Yes	N/A	–
V-Lab	ACS	£300	Yes	Yes	Yes	No	****	17
VIDIAmiga	Rombo	£130	Yes	Yes	No	Yes	****	5
VideoDigitiser	Datel	£80	Yes	Yes	No	No	N/A	–
Videon	Power Computing	£200	No	Yes	No	No	N/A	–
Vidi-12	Rombo	£99	Yes	Yes	No	Yes	*****	22
VideoMaster	MicroDeal	£69.95	Yes	Yes	No	Yes	****	25

SOUND SAMPLERS

Model	Supplier	Price	Stereo	Volume Adjust	Resolution	Rating	Issue
AD1012	HB Marketing	£399	Yes	Yes	12-bit	N/A	–
AD1016	HB Marketing	£TBA	Yes	Yes	16-bit	N/A	–
AMAS 2	MicroDeal	£100	Yes	Yes	8-bit	N/A	–
Audio Engineer	HB Marketing	£199	Yes	Yes	8-bit	*****	5
Audition 4	HB Marketing	£49	Yes	Yes	8-bit	****	10
GVP DSS	Silica	£60	Yes	Yes	8-bit	****	3
MicroSampler	Datel	£25	Yes	No	8-bit	N/A	–
Perfect Sound 3	HB Marketing	£60	Yes	Yes	8-bit	***	10
SampleStudio 2	Datel	£70	Yes	No	8-bit	N/A	–
Sound Master	HB Marketing	£130	Yes	Yes	8-bit	N/A	–
SoundTrap 3	Omega Projects	£30	No	No	8-bit	****	3
StereoMaster	MicroDeal	£40	Yes	Yes	8-bit	****	11
StereoSampler2	Trilogic	£40	Yes	Yes	8-bit	N/A	–
TechnoSound	New Dimensions	£35	Yes	No	8-bit	****	5
Clarity 16	MicroDeal	£149.95	Yes	Yes	16-bit	****	25

***Note:* AD1012 and AD1016 are for A1500Æ only**

GENLOCKS

Model	Supplier	Price	Fade	Dissolve	S-VHS	RGB Pass thru	Rating	Issue
8802 FMC	Marcam	£178	Yes	No	No	Yes	N/A	–
A8802	Marcam	£139	No	No	No	Yes	N/A	–
A8802S-VHS	Marcam	£499	Yes	Yes	Yes	Yes	***	10
A8806	Marcam	£499	No	No	No	Yes	N/A	–
GST Gold	Third Coast	£550	Yes	Yes	Yes	Yes	N/A	–
Hama 290	Hama PVAC	£749	Yes	Yes	Yes	Yes	****	16
ImageMaster	Neriki	£1,150	Yes	Yes	Yes	Yes	N/A	–
MicroGen	Power Computing	£199	Yes	Yes	No	Yes	N/A	–
MiniGen	ASAP	£99	No	No	No	No	N/A	–
ProGen	Gordon Harwood	£130	No	No	No	Yes	N/A	–
RocGen	Silica	£117	Yes	Yes	No	No	****	8
RocGen+	Silica	£199	Yes	Yes	No	Yes	****	10
VideoCentre2	G2	£1,170	Yes	Yes	Yes	Yes	N/A	–

PRODUCT LOCATOR

VideoCentre3	G2	£1,999	Yes	Yes	Yes	Yes	****	7
VideoMaster VM-2	Power Computing	£799	Yes	Yes	Yes	Yes	***	1
Videocomp G-100	Silica	£1,800	Yes	Yes	Yes	Yes	*****	3

COLOUR CARDS

Model	Supplier	Machine	Price	Type	Colour Palette	Max Resolution	Rating	Issue
DCTV	Silica	A500	£499	Pseudo	24-bit	368x580	****	12
OpalVision	Micro-PACE	A1500→	£899	24-bit	24-bit	768x580	*****	20
AVideo 12	Checkmate	A1500→	£299	12-bit	12-bit	768x580	***	13
AVideo 24	Checkmate	A1500→	£599	24-bit	24-bit	768x580	****	15
GVP IV-24	Silica	A1500→	£1,799	24-bit	24-bit	910x576	****	12
Harlequin	ACS	A1500→	£1,400	24-bit	24-bit	910x576	*****	11
Rembrandt	Power Computing	A1500→	£1,499	24-bit	24-bit	1024x1024	****	13
Retina	ACS	A1500→	£345	24-bit	24-bit	2400x1200	****	27

Note: A500 devices can be used on all Amigas

TOUCH TABLETS

Model	Supplier	Price	Size	Resolution	Rating	Issue
Cherry Mk4	Cherry	£450	9x12"	*****	N/A	–
Genitizer	Datel	£130	9x6"	****	N/A	–
Podstat PT-3030	HB Marketing	£179	9x12"	*****	N/A	–

DOT MATRIX PRINTERS

Model	Supplier	Price	Pins	Speed(CPS)	Fonts	Buffer	Rating	Issue
LQ550	Epson	£375	9	109	4	8K	***	4
Swift 9	Citizen	£280	9	121	3	8K	*****	4
LX850	Epson	£269	9/24	106	3	4K	***	4
200	Citizen	£250	24	240	7	8K	N/A	–
240C	Citizen	£350	24 (colour)	240	9	8K	N/A	–
L24d	Citizen	£292	24	109	3	8K	****	4
LC200	Star	£304	24	91	4	16K	****	4
LC24	Star	£304	24	130	5	16K	****	4
LQ400	Epson	£269	24	121	3	8K	****	4
ML380	Oki	£386	24	127	3	8K	****	4
P20	NEC	£351	24	115	8	8K	****	4
Swift 24	Citizen	£428	24	121	5	8K	****	4

INKJET PRINTERS

Model	Supplier	Price	Nozzles	Speed CPS	Fonts	Resolution	Rating	Issue
B100	Fujitsu	£349	48	160	3	300dpi	****	22
B200	Fujitsu	£499	48	180	3	300dpi	***	22
BJ-10ex	Canon	£299	64	83	4	360dpi	*****	22
BJ300	Canon	£495	64	300	3	360dpi	****	22
Diconix 701	Kodak	£399	48	200	3	300dpi	***	22
Projet	Citizen	£496	48	360	3	360dpi	****	22
SQ870	Epson	£659	48	360	8	360dpi	****	22

LASER PRINTERS

Model	Supplier	Price	Memory	Speed (pgs per min)	Fonts	Resolution	Rating	Issue
EPL4000	Epson	£799	512K–5.5Mb	6	2	300dpi	****	22
LBP-4 Plus	Canon	£1,175	512K–2.5Mb	5	5	300dpi	****	22
Laser 4	Star	£1,173	1Mb–5Mb	4	4	300dpi	****	22
OL400	Oki	£549	512K–2Mb	4	4	300dpi	*****	22
Ricoh LP1200	Silica	£820	2Mb–4Mb	6	6	400dpi	*****	22

MISCELLANEOUS HARDWARE

Model	Supplier	Price	Type	Rating	Issue
Golden Gate	Silica Systems	£N/A	25MHz 80386 PC Emulator for Amiga 1500+	N/A	–
I/O Port	SwitchSoft	£28	Electronics Projects kit	****	17
ICD KickBack	Silica Systems	£27	Keyboard switchable ROM sharer	N/A	–
Kickswitch	Omega Projects	£25	Keyboard switchable ROM sharer	N/A	–
RocKey	Silica Systems	£350	Chromakey for RocGen Plus genlock	****	19
Sound Enhancer	Omega Projects	£40	Improved Amiga sound capabilities	N/A	–
GlareGuard	GND Distribution`	£86.25	Screen filter	****	26
Toshiba CD-ROM	Almathera	£499	CD-ROM drive	****	27

If your company has a product which you think deserves to appear in the *Amiga Shopper Product Locator*, please write to us at the usual editorial address with full details.

HB Marketing have gone into liquidation. Turn to page 10 to find out other sources for products they've distributed

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Almathera	081 683 6418
App. Engineering	0101 214 241 6060
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Bytes & Pieces	0253 734218
Checkmate Digital Ltd	071 923 0658
Citizen	0895 72621
Commodore	0628 770088
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Cumana	0483 503121
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Epson UK	0442 61144
Evesham Micros	0386 765500
G2 Video Systems	0252 737151
Gasteiner	081 365 1151
GND Distribution	081 885 5512
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JCL Business Systems	0892 518181
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Naksha UK	0925 56398
NEC	081 993 9831
Neriki	081 900 1866
New Dimensions	0291 690933
Oki	0753 31292
Omega Projects	0702 466933
Pandaal Marketing	0234 855666
Power Computing	0234 273000
Protar	0923 54133
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Silica Systems	081 309 1111
SMG	0274 562999
Solid State Leisure	0933 650677
Star	0494 471111
Surface UK	081 566 6677
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Third Coast Technologies	0257472444
Trilogic	0274 678062
Virgo	0276 676308
WTS Electronics	0582 491949
ZCL Ltd	0543 251275

BUYING ADVICE FOR SHOPPERS

Whether you're buying over the phone or at a local store, here's our advice on getting what you want.

BUYING IN PERSON

• Where possible, always test any software and hardware in the shop before taking it home, to make sure that everything works properly.
• Make sure you have all the necessary leads, manuals or other accessories you should have.
• Don't forget to keep your receipt.

BUYING BY PHONE

• Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
• Check the price you are asked to pay, and make sure that it's the same as the price advertised.
• Check that what you are ordering is actually in stock.
• Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
• Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you use to buy, you are entitled to return a product if it fails to meet any one of the following three criteria:

❶ The goods must be of "merchantable quality".
❷ They must be "as described".
❸ They must be fit for the purpose for which they were sold or for the purpose you specified when ordering.

If they fail to satisfy any or all of the criteria, then you are then entitled to:
• Return them for a refund.
• Receive compensation for part of the value.
• Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim your money back from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different sources charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit-making operations. AS

BUYING BY MAIL

• Before you send any money, ring the supplier to confirm that the item you want is in stock and when the delivery is likely to be made. Enquire about returning unwanted goods and the supplier's refund policy. Find out about hidden extras like postage and packing charges, and whether the prices quoted include VAT.

• Beware of companies that do not include an address in their adverts.

• If ordering goods of more than £100 in total value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.

• Always buy from the most recent issue of *Amiga Shopper*.

• When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier immediately. If something doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.

• If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory – check the local council listing).

• Always keep records of correspondence with any mail order company you deal with and also make a note of where and when you saw the product advertised. False or misleading advertising is an offence, and suppliers must stick to what they've said in adverts.

AD INDEX

AMIGA SHOPPER

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IN NEXT MONTH'S ISSUE

What with the recent raid and subsequent arrest by the Metropolitan Police Computer Crime Unit, it seems that digital delinquency is on the up. As our society comes to value information more and more highly, the damage that can be done by miscreants becomes correspondingly greater. Which is why next month we'll be examining the issue of computer crime.

There are a number of areas that we'll be exploring. Piracy is the most cited reason for the diminishing interest of software vendors in the Amiga market. The damage it does is tremendous. We'll be going undercover, logging on to a pirate bulletin board and telling you what it's all about. We'll also be taking a look at viruses, explaining what they are, what they do and how you can beat them. The shady world of hacking will be coming under scrutiny, and we'll be taking a look at pornography and violence in software – two areas which have been blessed by the attentions of the national media – and discussing the question of censorship.

Along with all this we'll be including interviews and comments from industry figures and members of the Metropolitan Police Computer Crime Unit on the problems they are facing.

Naturally, we'll also be serving up the diet of software and hardware reviews, news and tutorials that you've come to know, love and hunger after.

The new high-density floppy drive from Power Computing gets the scrupulous *Amiga Shopper* analysis. It will fit 1.76Mb on an AmigaDOS disk or 1.44Mb on a PC disk. Next month we put it through its paces.

In our regular desktop publishing column we'll be taking an in-depth look at printing. In our step-by-step guide you'll find out how to accurately configure your system for the printer you own. We'll also be giving you hints and tips on avoiding all those irritating problems like misalignment of text



There's nothing jolly about piracy's tremendous damage to the Amiga market. We investigate.

on consecutive sheets.

And if you're still looking for a printer, you'll want to check out our round-up of three of the latest: Canon's BJ-10sx, Citizen's Swift 90c and Epson's Stylus 800.

Amiga Shopper 29 goes on sale on Tuesday 3 August, priced at only £1.95. Buy it – it makes serious sense. AS

ARE YOU IN THE WINNERS' CIRCLE?

There were 25 winners of our Logic 3 mousemat giveaway: D McFarlane of Leicester; D R Taylor, Oakham; Paul Crossley, Rhosneigr; P Michalak, Chasetown; D Whitfield, London W2; P M Garner, Hayes; C Cannon, Romford; S Mald, Edgware; D Palmer, Newcastle-upon-Tyne; D Pirrie, Glenrothes; C Harris, Poole; G Newing, Pembroke Dock; P Matthews, Blackpool; D Spencer, Isle of Wight; M Escolme, Lancaster; R Williams, Oxon; S Law, Bexleyheath; A J McDade, Guernsey; J Hills, Darwen; M R Appleby, Newcastle-upon-Tyne; D Brocklebank, Wimborne; J Amor, Thatcham; C Laurie, St Austell; D Ginger, Hemel Hempstead; G Hancox, Great Barr.

The winners of our Looney Tunes competition, each of whom collects a copy of *Deluxe Music Construction Kit*, are: Z Tran, Tenby; G Lucas, Stoke; L Mutch, Skelmersdale; D Rennison, Newcastle; A Mitchell, Rotherham.

The winners of the last two free subscription competions were A Smith from Kings Lynn and Ben Thompson of Leeds. Each of them wins a year's subscription to *Amiga Shopper*. The answers: *Soul of a New Machine* was written by Tracy Kidder, and it was the Bell XS-1 that broke the sound barrier.

MAG*SAVE

AMIGA SHOPPER SELLS LIKE ICE CREAMS IN A HEATWAVE – SO DON'T MISS OUT: RESERVE YOUR COPY AT YOUR LOCAL NEWSAGENT NOW!

DEAR NEWSAGENT, Please reserve/deliver me a copy of *Amiga Shopper* every month, beginning with the September issue, which goes on sale on Tuesday 3 August.

Name ____________________

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• NOTE TO NEWSAGENT: *Amiga Shopper* is published by Future Publishing (0225 442244) and is available from your local wholesaler.

• PS Oh, and if you do have any problems getting hold of your favourite Amiga mag, call Kate Elston on 0225 442244 and she'll help you out.

AMIGA SHOPPER

AT A GLANCE GUIDE

To help you find what you want quickly and easily, here is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 37. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

***Amiga Shopper*,**
30 Monmouth Street,
Bath, Avon BA1 2BW.

WIN • WIN • WIN • WIN • WIN • WIN

Join the Jet set!



Portability and high-quality output are just two reasons you'll want to get your hands on a new BJ-10sx Bubble Jet printer from Canon – we have two to be won!

For our competition this month we've teamed up with those nice people from Canon to offer *Amiga Shopper* readers one beauty of a competition – the two lucky winners will each get to collect a Canon BJ-10sx portable Bubble Jet printer worth £351. What's more, the first prize winner also picks up a plain paper sheet feeder unit which makes printing long documents or multiple copies a doddle.

The BJ-10sx is the latest in a range of sophisticated Bubble Jet printers from Canon. It began in 1990 when they released the BJ-10e, which provided a landmark for portable, low-cost, high quality output. The next model released was the BJ-10ex, which rapidly rose to become the UK's best selling printer.

With the new BJ-10sx, Canon have taken the opportunity to refine this popular machine. Speedwise their new printer is no slouch – it whizzes along at a print speed of up to 116 characters per second. Canon have also taken heed of users' comments and redesigned the front control panel to make for simpler operation.

Now, why is Canon's new BJ-10sx such a desirable item? Well, first off, it's an easily portable machine – designed to allow users to have access to high-quality output even if they're on the move. Weighing in at just 1.7kg and measuring 310 x 221 x 47 mm, it's not much larger than an A600. Output quality hasn't been sacrificed though. It delivers a print resolution of 360 by 360 dots per inch, so you'll always get crystal-clear text along with stunning graphics.

Maintenance should never be a problem either. That's all down to Canon's unique snap-in replaceable print cartridge. The cartridge contains both the print head and the ink reservoir and can be swapped in just a few seconds. It contains 28g of ink – sufficient to print about 700,000 characters in high-quality mode.

So, what do you have to do to get your paws on one? Just answer the three questions in the box below, then send your answers on a postcard (or the back of a sealed envelope) to:

Canon's Blazing
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

The closing date is Friday 6 August. Please state if you don't want your name included on a mailing list. AS

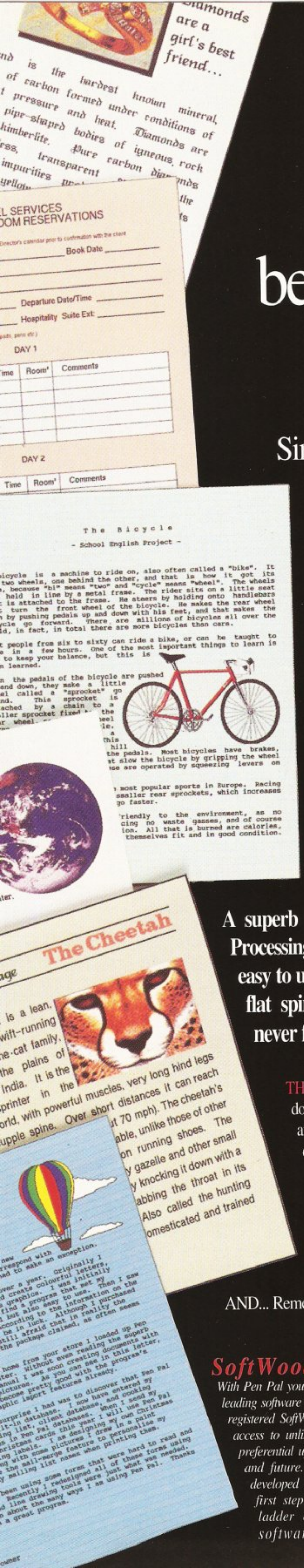
THE QUESTIONS

1. The BJ-10sx prints at 360 DPI. The acronym DPI stands for:
(a) Digital Printer Interface
(b) Dots Per Inch
(c) Dynamic Pitch Interlace

2. The Canon BJ-10sx is virtually maintenance free because:
(a) It has an exchangeable print head/ink reservoir
(b) The printer is constructed from high grade steel plate
(c) All the moving parts use frictionless bearings

3. One print cartridge will produce approximately:
(a) 7,000 characters
(b) 70,000 characters
(c) 700,000 characters

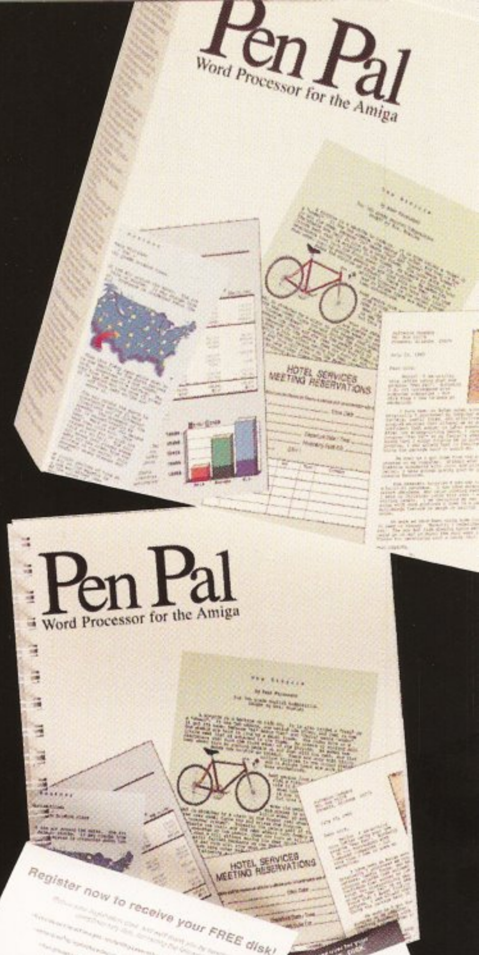
WIN • WIN • WIN • WIN • WIN • WIN



The Best Selling Word Processor and Database just became even better...

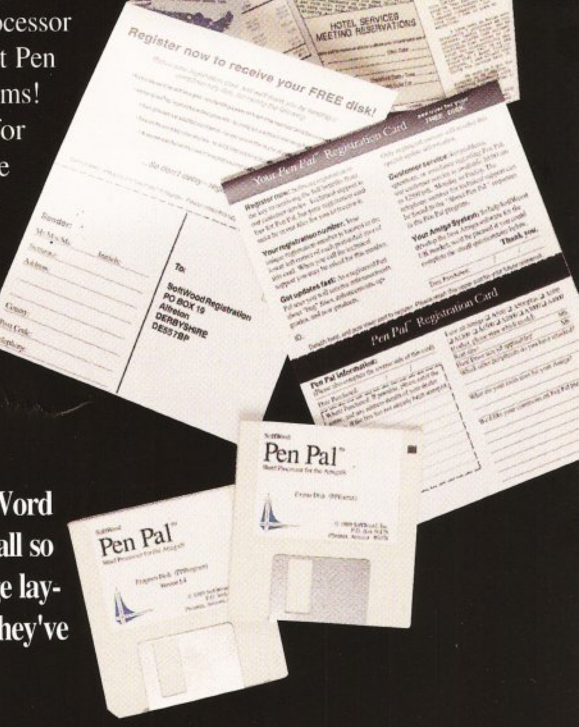
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Pen Pal



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THE DATABASE: With 32 fields per record, 32,000 records per database and a fast sort of 1000 records in less than 5 seconds, this is a *real* database. Mail merging into the Word processor couldn't be simpler, with easy creation of templates for letters or reports, into which information can be merged.

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Pen Pal is available from all good Amiga software Dealers or from SoftWood. Call for your list of stockists.

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Pen Pal is compatible with any Amiga from A500 to the latest A1200/A4000 ranges with a minimum of 1 Mb. available free memory

Power Computing's innovative 4MB 32-bit memory expansion for the Amiga 1200 is now available. The PC1204 includes these many features:

Zero Wait State - Unlike some other expansions the PC1204 never leaves the processor waiting around for data, which means that your A1200 can run at its maximum speed.

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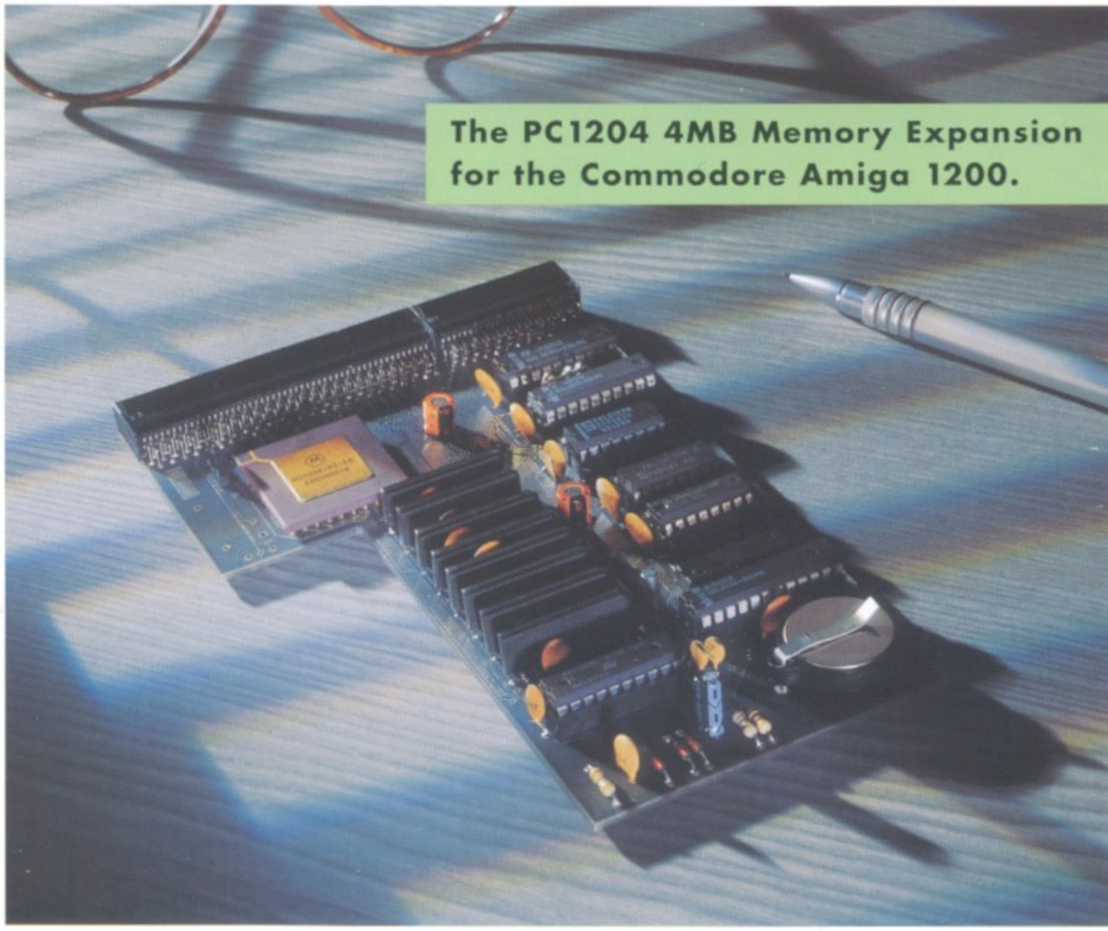
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The PC1204 4MB Memory Expansion for the Commodore Amiga 1200.



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